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NEW SPECIES AND RACES OF LIPTENINAE (LEPIDOPTERA, LYCAENIDAE)

By W. HAWKER-SMITH, F.E.S.

ALL the specimens dealt with in this paper are in the collection of the late J. J. Joicey. The specimens collected by Dr. S. A. Neave were received in exchange from the British Museum (Nat. Hist.), in which institute there are long series of all the forms, examples of which are here described.

1. **Alaena amazoula nyasana,** subsp. n.

♂. Upperside, resembling ♀ of *amazoula*, Bdv. Fore-wing orange-yellow, the costa above the cell broadly black, invading the cell, which is itself heavily surrounded with black and closed with a spot of the same colour. The apex and hind margin more broadly fuscous than in *amazoula*, all the veins finely black, broader at the marginal band. Hind-wing orange-yellow, the costa not darkened, a black spot at the end of the cell. Outer margin narrowly black. The veins finely black, thickening towards the outer margin. Underside unicolorous orange-yellow. The cell of fore-wing surrounded with black, which invades and divides the yellow colour into three spots. The veins on both wings finely black. Outer margins linear black, fringes fuscous.

♀. Similar to the ♂ but larger. Fore-wing with the costa less broadly black and cell very finely edged with black. The veins as in the ♂ but finer. Underside as in the ♂ but the cell of fore-wing not blackened.

Length of fore-wing, ♂, 14 mm.; ♀, 15·5 mm.

Hab. NYASALAND: Mt. Mlanje, 4 ♂♂, 6 ♀♀, iii.1913 (*S. A. Neave*).

2. **Alaena nyassae marmorata,** subsp. n.

♂. Upperside, resembling *nyassae*, Hew., but smaller. Fore-wing fuscous, the cell paler and crossed in the centre by a dark bar showing through from the underside; a white curved discal fascia extends from the costa where it is narrow, and gradually widens to the inner margin; a pale subapical spot in area 6. Fringe white, fuscous at the veins. Hind-wing fuscous with a broad white fascia including the cell except at the base; this fascia has a marbled appearance due to the underside reticulations showing through. A black spot at the upper end of the cell, the radial and median veins black above and below the cell. A submarginal row of white spots between the veins. Margin linear black, fringes as in fore-wing. Underside resembles *reticulata*, Butl., in markings. Fore-wing pale primrose-yellow, the cell crossed by a black bar and surrounded by fuscous markings. A white fascia, edged distally with fuscous, corresponding to that on the upperside. All the veins black. Hind-wing ground-colour and fascia as in fore-wing, the veins black. A broken bar crossing the cell, an irregular line from the costa to the inner margin closing the cell, a similar discal line marking the edge of the fascia, a submarginal line, sometimes obsolete, of fuscous lunules between the veins. The area between the cell and inner margin reticulated with black, outer margin linear black.

Length of fore-wing, 15·5 mm.

Hab. S. E. Congo : East Luvua Valley, Lake Mweru Dist., 4000–5000 feet, iii.1922, wet season, 6 ♂♂ (*T. A. Barns*).

3. **Alaena ferrulineata,** sp. n.

♂. Upperside, resembling *caissa*, Reb., and *reticulata*, Butl. Fore-wing fuscous showing the veins black; a white basal streak, and two spots in the cell; a white discal fascia divided by the black veins into seven or eight spots, the upper four or five small, the two discal ones larger, and the lower one in area 1 very long, extending nearly to the base; a submarginal line of white spots between the veins; fringe white, black at the vein ends. Hind-wing black; a white discal fascia with two minute spots between it and the costa in areas 6 and 7; fringe as on the fore-wing. Underside of fore-wing white, the base and area round the cell black, three black spots in the cell; a white discal fascia beyond cell, followed by a black irregular line from the costal to the inner margin; the apical area with the veins and submarginal line pale orange-yellow; veins 1, 2, 3, and the submarginal line between them black. Hind-wing white. A black basal spot and three black spots on the costa; the cell and area round reticulated with pale orange-yellow changing to black between the median vein and inner margin; a white discal fascia, an irregular black line from the costa to inner margin, an orange-yellow submarginal line changing to black below vein 3; the veins orange-yellow where the cross-lines and reticulations are of that colour. Fringes white, black at the vein ends on both wings.

♀. Like the ♂, but paler fuscous, the veins black, and on the underside the markings are black without any orange-yellow.

Length of fore-wing, ♂, 14·5 mm.; ♀, 16 mm.

Hab. Tanganyika Terr. : Arusha District, Ngorongoro Crater, interior at 5900 feet, 8 ♂♂; escarpment below Lake Manyara, ii.1921, 1 ♀ (*T. A. Barns*).

4. **Alaena picata interrupta,** subsp. n.

♂. Upperside of fore-wing resembling *picata*, Shpe., but the orange fascia is interrupted between veins 2 and 3. Hind-wing identical with *picata*. Underside of fore-wing as above. Hind-wing with the basal costal spots united and not divided as in *picata*, the three lower basal spots separated. A black spot at the end of the cell is conspicuous in *picata*, but absent in *interrupta*.

♀. Practically identical with *picata*, ♀. Distinguished on the underside of the hind-wing by the spots at the base of the inner margin being separated into three as in the ♂ and also by the black spot at the upper end of the cell being absent.

Length of fore-wing, ♂, 16 mm.; ♀, 17 mm.

Hab. Nyasaland : Mt. Mlanje, v.1913, 2 ♂♂, 2 ♀♀ (*S. A. Neave*). Also 12 ♂♂, 12 ♀♀ in the British Museum taken at the same time.

5. **Alaena maculata,** sp. n.

♂♀. Smaller than *oberthüri*, Auriv., which it closely resembles on the upperside, the white discal band more broken up into spots by the veins. Underside of fore-wing fuscous; a subcostal streak nearly half the length of the wing, a spot at the end of the cell, a costal spot above it, the post-discal fascia as on the upperside, followed by a subapical band and a row of submarginal spots; all these markings whitish slightly tinged with ochreous, especially the costal ones and the post-discal band. Fringe pale ochreous, interrupted with blackish at the veins. Hind-wing underside fuscous, a pale spot at the base, a sub-basal band of four spots, followed by a band of five spots, those at the costa and hind margin very minute, a spot at the end of the cell, a discal band of small spots, a post-

discal band of larger spots, and a submarginal band of spots, the fringe pale, interrupted with blackish spots at the veins; all these markings are almost white. Underside of abdomen fulvous.

Length of fore-wing, ♂, 12 mm.; ♀, 13·5 mm.

Hab. South-east Congo: South Lufonso River, east Luvua Valley, Lake Mweru district, 5000 feet, iii.1922, wet season, 9 ♂♂, 1 ♀ (*T. A. Barns*).

6. **Alaena maculata ochrea,** subsp. n.

♂. The markings are ochreous instead of white, and the post-discal band is considerably wider.

Hab. South-east Congo: East Luvua Valley, escarpment north-east of Lake Mweru, 4000–5000 feet, iii.1922, wet season, 6 ♂♂ (*T. A. Barns*).

7. **Pentila nyassana obsoleta,** subsp. n.

♂. Upperside of fore-wing yellowish-fulvous but paler than in *nyassana*, apex and outer margin blackish as in that form, only the spot at the end of the cell and the discal spot between veins 2 and 3 prominent, the post-discal and subbasal spots obsolete or obsolescent. Hind-wing as in *nyassana*, but the inner edge of the black border is smoothly rounded, and the spots are all more or less obsolescent, only one or two being prominent. Underside as above, but the borders of the upperside show through as a greenish shade, only the extreme margins of the wings and the fringes being black; the spots mostly small, but clearer and more prominent than on the upperside.

Length of fore-wing, 19 mm.

Hab. Victoria Falls, Zambezi, ii. 1909, 3 ♂♂ (*E. Bourke*) (coll. Trimen).

8. **Pentila subfuscata**, sp. n.

♂♀. Upperside of fore-wing reddish-fulvous, the costa, apex, and hind margin very broadly fuscous, covering more than half of the wing. Two black spots in the subcostal part of the cell, one towards the base and the other towards the apex, a larger spot at the end of the cell, and a discal spot between veins 2 and 3. Hind-wing of the same colour as the fore-wing. A spot at the end of the cell, a small indistinct discal spot between 2 and 3, a fuscous hind-marginal border about 2 mm. in width, preceded by an indistinct row of spots of the same colour. Underside of fore-wing reddish-fulvous, the fuscous spots of the upperside replaced by yellowish, thickly irrorated with grey; spots as on the upperside but more prominent; an indistinct row of four subcostal spots, and a curved band of similar post-discal spots. Hind-wing yellowish tinged with reddish, and thickly irrorated with grey, being darker than on the fore-wing. The spots as on the upperside are supplemented by a spot near the base of the cell, two in the cell, and one below it. All these spots are more prominent than on the upperside.

Length of fore-wing, 20·5 mm.

Hab. Belgian Congo: Katanga, ♂♀, 1929. A ♂ specimen in coll. Druce in poor condition, from the Upper Kasai District, was thought to be an aberration of *petreia*, but it is strikingly different in appearance, a fact that, coupled with the acquisition of the Katanga pair, seems to show that these three specimens are entitled to specific rank.

9. **Pentila latimargo,** sp. n.

Nearly allied to *ntebi*, B.-Bkr.

♂♀. Upperside of fore-wing semitransparent white tinged with fulvous at the base; the costal area above the cell, except the fulvous basal portion, and the apical half of the wing

from the end of the cell to the tornus fuscous; an indistinct darker spot at the end of the cell, rather larger in the ♀. Hind-wing semitransparent white tinged with fulvous at the base, the outer margin and fringe faintly blackish in the ♂, white in the ♀.

Length of fore-wing, ♂, 16 mm; ♀, 18 mm.

Hab. South Sudan: Yambio, 6 ♂♂; Uganda: Mpanga Forest, Toro, 4800 feet, xi.1911 (*S. A. Neave*), 1 ♀. A note by Mr. Bethune-Baker says—"Probably a local form of *ntebi* but, since it is also from Uganda, it is deserving of specific rank."

10. **Pentila subochracea,** sp. n.

Allied to *cloetensi*, Auriv.

♂♀. Upperside of fore-wing more luteous than in *cloetensi*, and the dark apical patch so closely appressed to the margin as to almost obliterate the alternate black and light marginal spots which, where they appear near the tornus, are more elongated than in *cloetensi*; there is also a spot in area 1, beneath the origin of vein 2, which is nearly always absent in *cloetensi*. Hind-wing strongly ochraceous at the base, in the cell, and on the inner margin as far as vein 3; the marginal and other spots as in *cloetensi*. Underside of fore-wing as in *cloetensi* but more luteous, and the black apical patch nearly always present as on the upperside, in *cloetensi* it is rarely present, being usually represented by black striae. Hind-wing as on the upperside.

Length of fore-wing, ♂, 18·5 mm.; ♀, 19 mm.

Hab. Congo: Upper Kasai District, 1 ♂, 2 ♀♀ (*P. Landbeck*), (types); Middle Lowa Valley, 1 ♂; West Kivu, 1 ♂ (*T. A. Barns*); Katanga, 1 ♀. The Katanga ♀ has the apical patch partially obsolete on the underside.

11. **Pentila aspasia albida,** subsp. n.

Apparently a white form of *aspasia*, Grünb.

♂♀. Upperside of fore-wing white with the spots arranged as in the typical form. Three spots in the cell and one at the end, at equal distances; above these spots, except the basal one, between the cell and the costa are six spots of which the four middle ones are arranged in pairs; the apex black, broken into spots along the hind margin, and a discal spot between veins 2 and 3. Hind-wing white, a spot above the cell, one closing the cell and one below it, seven marginal spots. Underside like *aspasia*, but almost white and wanting the sub-apical row of spots on the fore-wing.

Length of fore-wing, ♂, 17 mm.; ♀, 19 mm.

Hab. Uganda: Daro Forest, Toro, 4000–4500 feet, x.1911 (*S. A. Neave*), ♂ ♀ (types); Mulange, Mabira Forest, 1 ♂, 1920 (*R. A. Dummer*).

12. **Pentila emarginata,** sp. n.

Belonging to Aurivillius' third group of *Pentila*, this species appears to be nearest to *kirbyi*, Auriv.

♂. Upperside of fore-wing transparent white, the costa broadly fuscous, invading the cell, especially the basal half; a large round spot at the end of the cell, coherent with the costal black; between this spot and the apical patch, the costal border is very narrow. The apical patch is broad and convex towards the base, the outer marginal border broad but narrow where it joins the apical patch, giving the inner edge of the border an emarginate appearance. Hind-wing similar in colour to the fore-wing, a round black spot at the end of the cell, the apical and outer marginal border emarginate inwardly. Underside the same as above.

Length of fore-wing, 20 mm.

Hab. Belgian Congo : Lowowo Valley, South Lowa District, West Kivu, 4000 feet, 1 ♂, 1924 (*T. A. Barns*).

13. **Pseuderesia purpurea,** sp. n.

Near *libentina*, Hew.

♂. Upperside of fore-wing rich dark purple, a red patch on the inner margin larger than in *libentina*, extending into the end of the cell, almost as a separate spot. Hind-wing of same colour as the fore-wing, but the red area is confined to the central part of the wing; a dark spot at the end of the cell connected with the costal border. Underside of fore-wing almost identical with *libentina*; blackish-grey, the costal area above the cell, apex, and outer margin sprinkled with white striae; a red subapical band as in *libentina*, but farther from the apex, at costal end of the band is a spot of the same colour with a black spot on each side of it, a black spot at end of cell, area between veins 2 and 3 striated with red. Fringe whitish, interrupted with black at the vein ends. Hind-wing almost identical in colour and markings with *libentina*, but wanting the black basal spots.

♀. Upperside of fore-wing black, with a red patch as in *libentina*, the red extending farther towards the costa up to vein 6, and sometimes with an extra red spot near the end of the cell. Hind-wing with the costal, basal, and inner marginal black more extensive, the red not extending so far towards the base. Underside of fore-wing dark grey at the base, the costa, apex, and outer margin white closely sprinkled with black striae, the disc orange fulvous with the veins only slightly dusky. The dark post-discal band much narrower than in *libentina*, followed by a red subapical band, a black submarginal line before the white, black-streaked margin. Fringe whitish, widely interrupted with black at the veins. Hind-wing as in *libentina*, but the red markings rather more extensive, and the upper basal spot practically obsolete.

Length of fore-wing, ♂, 16 mm.; ♀, 20 mm.

Hab. Belgian Congo : Katanga, 1926, 1 ♂, 1 ♀ (types); Ituri Forest, 1 ♀; Lubilinga Valley, N.E. Lubutu, 2 ♀♀; Lindi River, 1 ♀; Upper Maiko Valley, 1 ♀ (*T. A. Barns*).

The males are readily distinguishable, but the females are so close to *libentina* that they are more easily separated by locality. The clearer underside discal ground-colour and finer markings, are fairly constant characters.

14. **Pseuderesia barnsi,** sp. n.

Allied to *debora*, Kby., which it very closely resembles on the upperside; on the underside it closely approaches *libentina*, Hew., and *purpurea*, H.-Sm.

♂. Upperside of fore-wing unicolorous dark brown. Hind-wing dark brown tinged with crimson, due to the underside markings showing through; a large orange patch from the anal angle and inner margin as in *debora*, but extending almost to vein 5. Fringes white on both wings. Underside of fore-wing fuscous, pale at the inner margin and tornus. Costal area striated with pale grey above the cell and with red in the cell and between veins 5 and 6 beyond the cell; a subapical red band divided into spots by the veins, apex and outer margin striated with pale grey; extreme margin black, fringe black spotted with white. Hind-wing mottled grey, the basal spots missing as in *purpurea*; a longitudinal red streak below the costa, a black spot above the cell, another on the costa, a broad irregular red band from the costa, practically filling the whole cell and extending to vein 1, a black spot at the end of the cell, another below the cell near the origin of vein 2, a broken and irregular red band from the costa to vein 1, edged with black, outer margin black, fringe white spotted with black at the vein ends.

Length of fore-wing, 14·5 mm.

Hab. Belgian Congo: Bafwasende, Lindi River, 2000 feet, vii.1921, 1 ♂ (*T. A. Barns*).

15. **Citrinophila erastus pallida,** subsp. n.

♂. Upperside, paler yellow than *erastus*, Hew., nearly as pale as the female of this form. Both wings tinged with bright yellow, the dark basal cellular and costal shade of the fore-wing almost greenish owing to the thick covering of yellow scales extending to the costa. The black margins of both wings are narrower than in *erastus*. Underside as in *erastus* but paler and the marginal spots smaller.

♀. Fore-wing paler than in *erastus* ♀, with the marginal black narrower and the costal dusting more confined. Hind-wing of same colour as the fore-wing; the six marginal spots placed at the ends of the veins are smaller than in the typical form.

Length of fore-wing, ♂♀, 21·5 mm.

Hab. Belgian Congo: Lowa Valley, 3600–4000 feet, ii.1924, 4 ♂♂, 1 ♀ (*T. A. Barns*) (types); Semliki Valley 2, ♀♀; Tshopo Valley, 1 ♀; Upper Kasai River, 3 ♀♀; Katanga, 2 ♀♀. Also 4 ♀♀ from Uganda.

16. **Teriomima parva,** sp. n.

♀. *Durbania micra*, Gr.-Sm., Nov. Zool., Tring, **5**: 356 (1898); Smith & Kirby, Rhop. Exot. Lyc. Afr., p. 140, pl. XXIX, fig. 12 (1901).

♂. Upperside of fore-wing orange-fulvous. Costa spotted with blackish, a minute subapical black band from the costa to vein 5, apex broadly dark brown narrowing to a point at the tornus, a black spot at the end of the cell. Hind-wing clear orange-fulvous, the fringe black spotted. Underside of fore-wing paler than above, cream-coloured towards the base and inner margin, with five grey and slightly iridescent bands from the costa to the median vein, and a submarginal band of the same colour reaching nearly to vein 2. Hind-wing orange-fulvous, crossed by five grey bands filled in with slightly iridescent scales. Fringes of both wings blackish, with yellowish intervals on the hind-wing.

♀. Paler and duller than the ♂. Upperside of fore-wing with the costa yellow bearing three dark spots; a dark brown marginal band, broad at the apex and narrowing to a point at the tornus. Underside of fore-wing ochreous, with a series of grey silvery bands more extended than those on the ♂; there is an extra band just before the submarginal band. Fringe alternately spotted with ochreous and dark brown. Hind-wing ochreous, crossed by a series of six greyish bands filled in with silvery scales.

Length of fore-wing, ♂, 12 mm.; ♀, 10 mm.

Hab. Mombasa, Rabai, i.1904, 1 ♂, 1 ♀ (*K. St. A. Rogers*).

17. **Teriomima minima,** sp. n.

Allied to *parva*, H.-Sm.

♂. Upperside of fore-wing yellow, dusky at the base. Four short blackish bands from the costa, three crossing the cell but not extending beyond the median vein, a spot below the cell near the origin of vein 2, a blackish outer marginal border widest at the apex and narrowing to the tornus. Hind-wing more ochreous than the fore-wing, with a blackish outer marginal border. Underside of fore-wing paler than the upperside, markings similar, except that the black marginal band is divided into two greyish bands edged with black. Hind-wing yellow, with five irregular transverse silvery grey bands edged with black, reaching from the costa to the inner margin; a blackish submarginal line. Fringe yellow, partly covered with black.

Length of fore-wing, 10 mm.

Hab. Kenya: Uchweni Forest, Witu, ii.1912, 2 ♂♂ (*S. A. Neave*).

18. **Teriomima minima latimarginata,** subsp. n.

A very much darkened form of *minima*, H.-Sm.

♂. Upperside of fore-wing with the costa, apex, and outer margin very broadly black, reducing the ochreous ground-colour to a patch on the inner margin not reaching beyond the median vein. The markings are as in *minima*, the spaces between the bands indicated by four minute ochreous spots on the costa. Hind-wing ochreous, with a broad black hind margin. Underside as in *minima*.

Length of fore-wing, 10·5 mm.

Hab. KENYA: Rabai, Mombasa, 1 ♂, 1906 (*K. St. A. Rogers*).

19. **Liptena albomacula,** sp. n.

♂♀. Upperside of fore-wing very like *opaca*, Kby., but differing in the purer white in which it resembles *confusa*, Auriv. The costa, apex, and outer margin broadly black; a spot at the edge of the cell on the edge of the costal border. Underside marked as in *opaca*, but the white spot in the apical black is very prominent. A pale submarginal line followed by a black marginal line in both wings. Cilia blackish, pale at the base. Hind-wings with a large black spot at the end of the cell.

Length of fore-wing, ♂♀, 15 mm.

Hab. BELGIAN CONGO: Katanga, vii.1925, 1 ♂, 1 ♀ (types); UGANDA, 1 ♀; CAMEROONS: Bitje, 1 ♀.

20. **Liptena subsuffusa,** sp. n.

Allied to *perobscura*, H. H. Druce, but wanting the spots on the underside.

♂. Upperside of fore-wing white. Costa broadly black, slightly invading the apex of the cell, widening towards the apex of the wing; apex and outer margin very broadly black, wider than in *perobscura*; a black spot at the end of the cell, sometimes merged in the costal border. Hind-wing white. A spot at the end of the cell, showing through from the underside; a slightly suffused submarginal border, intersected by a white line. Cilia black, tipped with white. Underside of fore-wing white. Costa suffused with brown, increasing towards the apex, leaving a subapical white patch; a dark submarginal shade followed by a pale line; margin black, intersected by a whitish line. Cilia grey, tipped whitish.

Length of fore-wing, 14 mm.

Hab. BELGIAN CONGO: Lowa Valley, West Kivu, 5000–6000 feet, ii.1924, 7 ♂♂ (*T. A. Barns*).

21. **Liptena inframacula,** sp. n.

Apparently allied to *fatima*, Kby., and *albicans*, Cator.

♂. Upperside of fore-wing white, slightly suffused with brownish-ochreous towards the base, the costa narrowly darkened especially at the basal third; apical third of costa, the apex and outer margin as far as vein 4 narrowly fuscous. Hind-wing white with the markings of the underside showing through. Underside of fore-wing creamy white, ochreous at the base, especially along the costal area; a spot at the end of the cell, a submarginal blackish line reaching vein 3, margin ochreous, ciliae blackish to vein 3. Hind-wing the same colour as fore-wing; a few minute black spots on the subbasal and submedian areas; a larger spot in the cell, a subcostal spot below vein 8, others between 4, 5, 6, and 7; a blackish submarginal line; margin ochreous, marked with black at the vein ends; ciliae white.

Length of fore-wing, 16 mm.

Hab. CAMEROONS: Bitje, Ja River, 2000 feet, 1912, 2 ♂♂ (*G. L. Bates*).

22. **Liptena xantha coomassiensis,** subsp. n.

This appears to be a West African form of *xantha*, Gr.-Sm., and differs in its smaller size from the Uganda species.

Length of fore-wing, 13 mm.

Hab. Friapere Forest, Coomassie, 3 ♂♂, 1 sex doubtful.

23. **Liptena fulvicans,** sp. n.

Allied to *flavicans*, S. & K., 1891.

♂. Upperside of fore-wing rich fulvous, the basal area suffused with fuscous, the costa broadly black, apical third of wing black, narrowing below vein 3 to the tornus; a black streak closing the cell; hind-marginal black encroaching on veins 1, 2, and 3, also on the submedian fold; lower margin of cell black, extending along vein 4 for a fourth of its length, the basal half of vein 1 black. Hind-wing similar in colour to the fore-wing. A black subcostal spot towards the apex, and a black streak closing the cell; hind-marginal border black, the anal half being double; transverse bands on the underside showing through. Underside of fore-wing pale fulvous; costa broadly black, pale at the base, with pale submarginal spots; apex pale cream-coloured crossed by a black submarginal line divided from the black margin by a pale line; costal black divided from a subapical black patch by an encroachment of the fulvous colour reaching nearly to the costa; the ends of veins 2 and 3 black. Hind-wing pale cream-coloured, crossed by seven transverse bands as in *flavicans*; submarginal line fuscous; margin linear cream-coloured; the bands 3, 4, and 5, unite below the costa into a fuscous patch, a pale post-discal patch between bands 5 and 6.

♀. Slightly larger than the ♂. Upperside of fore-wing paler fulvous than the ♂, the black markings almost exactly as in *flavicans*, but the costal black broad to the base as in the ♂, broken beyond the cell by a fulvous prominence reaching nearly to the costa. Hind-wing as in the ♂, the hind-marginal line being more apparently double, the inner line being very variable, dissolved into spots in some specimens, and practically obsolete in others. Underside as in the ♂.

Length of fore-wing, 19 mm.

Hab. Belgian Congo: Katanga, 11 ♂♂, 10 ♀♀, iii.1929.

24. **Liptena ochrea,** sp. n.

Appears to be allied to *undina*, S. & K.

♀. Upperside of fore-wing ochreous; costa narrowly brown, the border gradually widening towards the apex where it is broadest, narrowing towards the tornus, but forming a small tooth at vein 3 beyond which it is indicated by a few scattered scales. Hind-wing ochreous; a narrow brown border diffused towards the inner margin, extending as far as vein 4. Underside of both wings ochreous; a series of very indistinct fulvous transverse bands, three crossing the cell and three beyond it; a submarginal fulvous line.

Length of fore wing, 13 mm.

Hab. Cameroons: Bitje, Ja River, wet season, iv.–v.1912, 1 ♀ (*Bates*).

25. **Liptena rectifascia,** sp. n.

Very like *durbania*, B.-Bkr., of which it may possibly be a seasonal form.

♂. Upperside of fore-wing fulvous, rather duller than *durbania*. Costa dark, but not so broadly as in *durbania*, increasing towards the apex, and extending along the outer margin as far as vein 4, then narrowing to the tornus. Hind-wing as in *durbania*; fulvous,

with the hind margin narrowly dark, intersected by a fulvous line. Underside as in *durbania*, but the brown fasciae on the hind-wings are straight and not curved as in that species.

Length of fore-wing 14·5 mm.

Hab. Cameroons : Bitje, Ja River, wet season, iv.–v., 1 ♂ (*Bates*).

26. **Liptena rubromacula,** sp. n.

♂. Upperside of fore-wing black; three red spots, one on the inner margin, one between veins 1 and 2, and one between 2 and 3 forming a short post-discal band. Hind-wing black; a broad red band from vein 1*a* to the costa; between vein 1 and the inner margin the band turns at right angles into a narrow streak towards the base; at vein 6 it suddenly narrows towards the costa. Underside of fore-wing black from the base. A narrow reddish post-discal band from the inner margin to vein 6, followed by two spots towards the costa; a subcostal spot above the end of the cell; apex and outer margin broadly black with a few yellowish subapical and submarginal spots. Hind-wing black; a pale cream-coloured discal band tinged with reddish on the outer edge from near centre of the inner margin to costal, straight on the basal edge, but rapidly narrowing, at vein 6 on the distal edge, to the costa; an interrupted pale submarginal line.

Length of fore-wing, 16·5 mm.

Hab. Belgian Congo : Middle Lowa Valley, near Walikale, 3000–4000 feet, ii.1924, 1 ♂ (*T. A. Barns*) (type); West Semliki Valley, vi.1924, 1 ♂ (*T. A. Barns*).

27. **Liptena turbata congoana,** subsp. n.

♀. Upperside of fore-wing differs from *turbata* in the costal black not invading the cell; the apical black extends to vein 4, where it is joined by a narrow marginal border. On the hind-wing the hind-marginal border does not reach the costa except at the apex, is less broad, and is intersected by a line of the ground-colour indicated by spots in the apical half. Underside of both wings practically identical with *turbata*. It is, on the whole, a larger species.

Length of fore-wing, 18 mm.

Hab. Belgian Congo : West Semliki Valley, 3000 feet, vi.1924, 1 ♀ (*T. A. Barns*), (type); Uganda : Mulange, iii.1922, 1 ♀ (*Dummer*).

28. **Micropentila fulvula,** sp. n.

♂. Upperside of fore-wing fulvous, fuscous at the base. Costa broadly black, covering most of the cell, except a round spot at the end; beyond the cell the black extends to vein 4; apex very broadly black, narrowing along the outer margin to vein 2, enclosing a fulvous submarginal spot between veins 2 and 3; from vein 2 to the tornus the border is almost linear. Hind-wing fulvous, fuscous at the base and inner margin to vein 2; a black streak closing the cell, hind margin broadly black, intersected by an obscure line of fulvous spots, Underside of fore-wing fulvous, paler than the upperside; the base, cell, and costa blackish, a fulvous spot in the cell corresponding to that on the upperside, some pale spots along the costa; the fulvous colour forms a discal band nearly reaching the costa at vein 11, followed by a black post-discal band, and a fulvous line forming a subapical yellow patch; apex and outer margin black, intersected by a submarginal line of white spots extending to vein 2; tornus fulvous. Hind-wing black; a pale subbasal band with a spot below it; three ochreous spots, one near the inner margin, a large one in the cell, and a third below the costa; a fine discal line with a spot below it; a post-discal patch followed by a fine line expanding into two spots between veins 2, 3, and 4; a subterminal line of white spots;

hind margin black, with a fine pale submarginal line; also one or two very small pale subcostal spots.

Length of fore-wing, 12 mm.

Hab. Cameroons: Bitje, Ja River, 2 ♂♂, 1926 (*Bates*).

29. **Micropentila cingulum ugandae,** subsp. n.

♀. Upperside of fore-wing fuscous. A very pale yellow, almost white, post-discal band, narrower than in *cingulum*, H. H. Druce ♀, obsolescent between veins 5 and 7, ending in a spot on the costa. Hind-wing with the band broader and more luteous. Underside fuscous, paler than above, the fasciae on both wings luteous, on the fore-wing wider than on the upperside; a fine, crenulate, whitish submarginal line on both wings.

Length of fore-wing, 11·5 mm.

Hab. Uganda: Mulange, Mabira Forest, 4000 feet, 1 ♀, 1920 (*Dummer*).

30. **Argyrocheila undifera ugandae,** subsp. n.

♂♀. Upperside of fore-wing white, the markings as in *undifera*, Stgr., but more heavy, especially in the apical area where there is a large black costal spot, and the apex is heavily marked with black. Hind-wing as in the typical form. Underside as in *undifera*, but the markings rather more pronounced, especially on the fore-wings.

Length of fore-wing, ♂♀, 15 mm.

Hab. Uganda: Tero Forest, S.E. Buddu, 3000 feet, ix.1911, 2 ♂♂, 4 ♀♀ (*S. A. Neave*).

31. **Argyrocheila inundifera,** sp. n.

Allied to *bitje*, B.-Bkr., 1915.

♂. Upperside of fore-wing white, the spots on the underside showing through. Costal margin spotted with blackish-grey as in *undifera* and *bitje*; apex broadly dark grey with a black marginal line to vein 3, the ends of the veins intensely black; outer margin truncated towards the apex as in *undifera*, but with the undulations scarcely indicated. Hind-wing white, the vein ends slightly produced and intensely black at the margin. Underside of fore-wing white. A subbasal grey spot in the cell, and another closing the cell; the whole of the costal and apical areas spotted and irrorated with grey, the vein ends intensely black, forming a broken line at the outer margin. Hind-wing white, all the margins irrorated with grey, particularly at the inner margin; four grey spots in the subcostal area; a spot at the upper end of the cell at the origin of vein 5; a discal line of grey spots, a submarginal line of the same, the vein ends produced and intensely black at the margins, fringes white and produced at the vein ends. ♀ similar to the ♂.

Length of fore-wing, ♂, 14·5 mm.; ♀, 15,mm.

Hab. Belgian Congo: Katanga, 4 ♂♂, 1 ♀, vi.1925.

32. **Deloneura subfusca,** sp. n.

Closely resembling *ochrascens*, Neave (1904), on the upperside.

♂. Upperside of fore-wing orange-yellow, costa, apex, and hind margin broadly black, narrowing to a point at the tornus. Hind-wing slightly darker, hind margin not so broadly black as on the fore-wing. Underside of fore-wing as above, margins fuscous grey. Hind-wing fuscous grey tinged with yellow, hind margin fuscous. The underside is without the pale spots appearing in other species of *Deloneura*.

Length of fore-wing, 17 mm.

Hab. Belgian Congo: Katanga, 20.iii.1925, 1 ♂.

33. **Iridana magnifica,** sp. n.

Apparently allied to *exquisita*, Gr.-Sm., 1898.

♂. Upperside of fore-wing rich metallic dark blue, the costal, apical, and outer marginal black covering nearly half of the wing. Hind-wing the same colour as the fore-wing, the costa black to vein 6, the hind margin narrowly, and the inner margin broadly black. Underside of fore-wing grey, the basal half more suffused and darker; a fuscous spot at end of cell; apical area rufous, darker towards the apex where it is edged with metallic green, followed by a submarginal orange-brown line; outer margin dark silvery grey. Hind-wing dark metallic grey, costa orange near the base; a rich brown basal band covered posteriorly with metallic green scales; a similarly coloured subbasal band, orange between vein 8 and the costa; antemedian, discal, and post-discal bands united at the junction of veins 3 and 4, narrowing towards the inner margin; a band before the submarginal band; all these bands are rich chestnut-brown, centred by superimposed green scales; submarginal line orange-brown.

Length of fore-wing, 14 mm.

Hab. Belgian Congo: Katanga, 31.i.1927, 1 ♂.

34. **Epitola hewitsonioides,** sp. n.

Belonging to Aurivillius' first group of the genus and resembling a small *hewitsoni* in the colour and shape of the fore-wings.

♂. Upperside of fore-wing bright blue from the base to beyond the middle, especially between veins 4 and 5, the apex broadly black, narrowing towards the tornus. Hind-wing blue with narrow black margins. Underside of fore-wing dark grey; a white post-discal band of spots from the costa under vein 11 to vein 4; apex shaded with brown; a subapical band of whitish spots. Hind-wing brown tinged with pink; a series of three black subbasal spots, followed by a transverse band of four spots; a spot near the end of the cell, and a small one above it, another below it at the origin of vein 2; distal half of wing shaded with dark brown markings; a pale lunulate patch below the costa, pale longitudinal marks between 6 and 7, and a pale dash between 3 and 4.

♀. Upperside of fore-wing rather less bright than in the ♂, and the blue less extensive, not entirely covering the cell; a post-discal band of pale blue spots from below vein 11 to vein 4, separated from the proximal blue area by vein 4; apex as in the ♂, but more extensive at the tornus. Hind-wing as in the ♂, but the outer margin considerably wider. Underside of both wings as in the ♂, but paler, and the light markings more pronounced.

Length of fore-wing, 20·5 mm.

Hab. Belgian Congo: Middle Lowa Valley, near Walikale, 3000–4000 feet, ii.1924, 1 ♂ (*T. A. Barns*) (type); Cameroons, Bitje, 1 ♀.

35. **Epitola obscura,** sp. n.

Belonging to Aurivillius' sixth group of the genus and apparently allied to *pinodes*, H. H. Druce.

♂. Upperside of fore-wing black, with very few scattered blue scales in and below the cell. Hind-wing black, obscurely sprinkled with dark blue between veins 2 and 5, most prominent in the cell and between veins 4 and 5, but not reaching the margin. Underside dark ochreous-grey, with the usual black longitudinal stripe expanding distally between veins 1 and 6, reaching the margin between veins 1 and 2. Hind-wing dark ochreous-grey, with six darker transverse bands, and a similar marginal band.

Length of fore-wing, 16 mm.

Hab. Gold Coast: Lagos, 1 ♂.

THE GEOGRAPHICAL RACES OF *CHARAXES ANSORGEI*, ROTHSCH. (LEP. NYMPHALIDAE)

By Edward B. Poulton, D.Sc., F.R.S., Hope Professor of Zoology in the University of Oxford, Fellow of Jesus College, Oxford.

Plates 1 and 2.

An account of the geographical distribution and mimetic associations of four subspecies of *Charaxes ansorgei*, together with some addition to our knowledge of their behaviour in life, appeared in 1932 *Proc. Ent. Soc. Lond.*, **7** : 6–9, where it is stated on p. 8 that figures, with brief descriptions of the new forms, would it was hoped, "be communicated to *Stylops* in the near future." Hence the present short paper.

1. *Charaxes a. ansorgei*, Rothsch.—Plate 1, fig. 1—♂; fig. 2—♀. The male was described by Lord Rothschild in 1897 *Novit. Zool.*, **4** : 181–182, and figured in 1898 *ibid.*, **5**, pl. v, fig. 2. The female hitherto associated with this male is that of the next race, the true female being undescribed. Figure 2, reproduced from Mr. Alfred Robinson's excellent photograph, shows that the pattern of this female resembles that of the male and differs from the females of other known races of *ansorgei* in the tint of the F.W. discal band being orange instead of white. It is, however, paler than that of the male, especially so in area 1 where it becomes nearly white in some examples. Because of its paler tint this band stands out more prominently than that of the male, the difference being exaggerated by photography—so much so indeed that it became necessary to colour this marking in the print selected for reproduction. The dark, tawny marginal F.W. spots and submarginal H.W. spots are much reduced as compared with those of the male. Apart from this latter difference, the greater size of the female, its paler F.W. band, straighter F.W. outer margin and the wider black marginal area of both wings, the sexes of *a. ansorgei* are very similar in appearance.

The H.W. tails of both male and female are shorter than in the next race, a difference very clearly shown in pl. 1. In its paler tint and greater sensitiveness to actinic rays it would appear that the F.W. band of the female has already advanced in the direction of the white band of the other *ansorgei* races. There can be no doubt that, as regards this feature, it represents the ancestral form from which the others have directly or indirectly evolved.

Length of F.W. of specimens represented on pl. 1, fig. 1, ♂—41·0 mm.; fig. 2, ♀—47·5 mm.

The following examples were studied in the preparation of the above account :—

N.E. Uganda : S.W. of Mt. Elgon, Mt. Kokanjero, 6400 ft., 7–9 Aug. 1911 (*S. A. Neave*), ♂♀, Brit. Mus.; W. slope of Mt. Elgon, N. Bugishu, c. 7000 ft., Bulago, 26 Dec. 1928 (*G. D. Hale Carpenter*), ♀, Hope Dept., O.U. Mus.; ditto, Butandiga, 30 Dec., ♂; 1–4 Jan. 1929, ♀; 7 Jan., ♂.

Kenya Colony : E. slope of Mt. Elgon, Kitale, 1926, ♂, Nairobi Mus.; ditto, Sept. 1931 (*T. H. E. Jackson*), ♀; ditto, 1930, Herbst, ♂, Coll. J. Levick (ex Coll. Oberthür), here represented on pl. 1, fig. 1; ditto, Nov. 1930, ♂, Coll. Mme. Fournier; Trans. Nzoia, 15 miles E. of Mt. Elgon, 1500 metres, 1930, Herbst, ♂, Coll. Mme. Fournier; ditto, ♂, Brit. Mus. (ex Coll. J. J. Joicey); Nandi Country, Patsho, 11 Dec. 1896 (*Dr. J. W. Ansorge*), ♂, Tring Mus., Type, Rothsch. 1897 (Novit. Zool., **4** : 181; 1898, **5**, pl. v, fig. 2); W. slope Mau

Escarpt., 7000 ft., Lumbwa, Aug. 1920 (*H. L. Andrewes*), ♀ (perhaps bred, but nearly as large as the captured specimens), Hope Dept., O.U. Mus., here represented on pl. 1, fig. 2, Allotype; ditto, Dec. 1920, ♀, a very small specimen, probably bred. In addition to the above, two males in the Hope Dept., labelled "Nairobi, E. Afr. Prot., 17.v.1903," were collected by Mr. A. H. Harrison. These specimens, which agree with the type of *C. a. ansorgei*, were probably collected on the west side of the Rift Valley.

2. **Charaxes a. jacksoni,** subsp. n.—Plate 1, fig. 3—♂; fig. 4—♀. This subspecies has been carefully described, together with its life-history, by Dr. V. G. L. van Someren and Canon St. Aubyn Rogers, in *J. E. Afr. & Uganda Nat. Hist. Soc.*, **31–32 :** 153–156; pl. lxxi, figs. 1–4; lxxv, figs. 4, 5; lxxvi, figs. 11–13; also the female by A. G. Butler in *Proc. Zool. Soc.*, **1900 :** 915. Both these publications assumed that this race did not differ from *a. ansorgei* on the W. side of the Rift Valley. It is, however, evident that the material described in the E. African Journal was chiefly of the eastern race, having been collected near Uplands on the Kikuyu Escarpment, or bred from eggs or larvae obtained in the same locality. The distinctions pointed out below taken in connexion with the published descriptions and with the excellent figures on plate 1, provide means for the easy identification of this race of *ansorgei*.

Male.—Three closely similar examples of this sex have been kindly sent to me by my friend Dr. V. G. L. van Someren. They resemble on both upper and under surfaces the figures published in the *J. E. Afr. & Uganda Nat. Hist. Soc.* (**31–32 :** pl. lxxi, figs. 3, 4). So far as I am aware no other males of this race exist in European collections.

When figs. 1 and 3 of pl. 1 are compared it is at once obvious that the F.W. band of *jacksoni* (3) is much narrower than that of *ansorgei* (1), the black marks in the orange patches of areas 1*b*, 2 and 3 much larger, and the four orange spots beyond area 3 with the 2 others set at an angle with them, much smaller. The whole band, although narrower, stands out far more prominently than in *ansorgei* because of the much darker tint of the basal rich chestnut brown which deepens into black as it approaches the inner border of the chief marking. This darkened wing surface within the bar results in the two black spots of the cell becoming far less distinct than in *ansorgei*.

The F.W. marginal and the H.W. submarginal spots are smaller although the difference is not great. The H.W. tails are slenderer and much longer.

The H.W. under surface is characterised by the narrowness of the white band and especially by the nearly straight line followed by it and the four black marks along its inner border, in areas 1*c*, 2, 3 and 4. This part of the pattern appears to be a very convenient and distinctive feature, although only applicable to the males.

Female.—The difference between the patterns of these two races has already been pointed out under *ansorgei*. The greater prominence of the bar is not only due to its whiteness but, as in the male, is greatly enhanced by the dark tint of the basal surface of both fore- and hind-wings, especially the former. The H.W. tails are longer and stouter.

Length of F.W. of specimens represented on pl. 1, fig. 3, ♂—41·0 mm.; fig. 4, ♀—52·5 mm. It must be remembered that the ♂ being bred is probably much smaller than a wild example.

Examples studied :—Kenya Colony : Aberdare Mtns., E. foot and slopes, 7000–8500 ft., 24–27 Febr. 1911 (*S. A. Neave*), ♀, Brit. Mus.; Kikuyu Escarpt., nr. Uplands, Uganda Rly., 7500–8000 ft., Apr. 1926 (*V. G. L. van Someren*),

3 ♂♂ (probably all bred, 2 with pupa-cases), one represented on pl. 1, fig. 3, Type, 3 ♀♀ (all much smaller than pl. 1, fig. 4 and probably bred, 2 with pupa-cases), Hope Coll., O.U. Mus.: Kikuyu Forest, Roromo, 16 Dec. 1899 (*R. Crawshay*), ♀, Brit. Mus., Type of Butler's description of *Ch. a. ansorgei*, ♀, in 1900 *Proc. Zool. Soc.*, **1900** : 915, here represented on pl. 1, fig. 4, Allotype of ♀ *jacksoni*; ditto, 22 Jan. 1900, ♀, Tring Mus.

This interesting race is named in honour of Mr. T. H. E. Jackson, F.E.S., of Kitale, who first recognised the difference between the races of *ansorgei* on the two sides of the Rift Valley (1932 *Proc. Ent. Soc. Lond.*, **7** : 6).

3. *Charaxes a. ruandana*, Talb.—Plate 2, fig. 1—♂; fig. 2—♀. This race was described from the only known ♀ by Talbot in 1932 *Bull. Hill Mus.*, **4** : 289, and given the name *ruandana* because the locality, Kabira Forest, was stated by the captor, T. A. Barns, to be in Ruanda. If this is correct it must be, as Mr. Talbot writes, "in the southern corner of that area," inasmuch as the label furthermore records that the forest is 12 miles N. of Usumbura at the N. end of Lake Tanganyika. The males, except one, were taken rather further S. than the female, and the single example much further N., on the Congo border of W. Uganda.

Male.—The F.W. band and indeed the whole wing resemble *jacksoni*, but the four postdiscal spots and the two within them are somewhat larger, although smaller and more sharply defined than in *ansorgei*. The degree of development of the black marks in the orange constituents of the band in areas 1*a*, 2 and 3 is also intermediate between the darker *jacksoni* and the less dark *ansorgei*. The F.W. marginal spots are also intermediate but, in this respect, there is very little difference between the three races.

The narrowing of the anterior section of the H.W. band affords the most conspicuous distinction between the male *ruandana* and the other races, as may be seen at a glance when fig. 1 on pl. 2 is compared with 4 (*levicki*), and with 1 (*ansorgei*) and 3 (*jacksoni*) on pl. 1. This distinction, although very evident, is less marked in the other males of *ruandana*. In this, as in other respects, the male of *ruandana* is nearest to *jacksoni*, although the posterior section of the band in this latter is much broader, due to the spread of its inner border over the basal surface. The submarginal spots resemble those of *jacksoni* and are distinctly smaller and less developed than in *ansorgei*.

The beautiful and complex pattern of the F.W. under surface in this and the other races of the species was found to be so variable when a fair series was examined that, except in *jacksoni*, it became inexpedient to found any characters on its appearance in the single or very few examples which alone were available in all except *ansorgei*. There is, however, one striking feature, pointed out to me by Mr. Talbot, on the under surface of the hind-wing of *ruandana* ♂ in which the white band is much narrowed and almost obliterated by a somewhat rectangular black mark beyond the cell in area 4. The interruption is less and the mark less rectangular in a male from W. Uganda which, in this and other respects, is somewhat transitional towards *ansorgei*. In the narrowness of the H.W. band on the under surface *ruandana* resembles *jacksoni*.

Female.—The F.W. band is narrower than in the females of the other races and the whole effect of the upper surface more black-and-white and *brutus*-like. The spots of the postdiscal series are obsolescent except the anterior one which is distinct and white, not orange as in the other races. The almost complete suppression of the F.W. marginal as well as the H.W. submarginal markings is another distinctive feature well brought out in the figure (pl. 2, fig. 2). The contrast in this respect with the female *jacksoni* (pl. 1, fig. 4) is very strong.

The pale white and bluish H.W. band is also narrower than in the other races. The tails of both sexes appear to be intermediate between those of *ansorgei* and *jacksoni*, but in order to reach safe conclusions on this and other points a longer series of specimens is required.

Length of F.W. of specimens represented on pl. 2, fig. 1, ♂—40.0 mm.; fig. 2, ♀—48·75 mm.

Examples studied:—Virgin forest behind the shore mountains of N.W. Tanganyika, 18-2200 metres, Grauer, ♂ Allotype, Brit. Mus. (ex Coll. J. J. Joicey), represented on pl. 2, fig. 1; L. Tanganyika, N.W. shore, 1900–2100 m., Febr. 1910, Grauer, 2 ♂, Coll. Mme. Fournier and Tring Mus.; 12 m. N. of Usumbura at N. end L. Tanganyika, Ruanda Distr., Kabira forest, 7000 ft., Jan. 1924, Wet Season (*T. A. Barns*), ♀, Type of Talbot's description in 1932 *Bull. Hill Mus.*, **4**: 289, Brit. Mus. (ex Coll. J. J. Joicey), here represented on pl. 2, fig. 2; W. Uganda, Congo border, Mar.–Apr. 1926 (*E. Barns*), ♂, Brit. Mus. (ex Coll. J. J. Joicey).

In addition to the above my friend M. Le Cerf has kindly shown me a ♂ in the Paris Museum which appears to be quite distinct from *ruandana* as here described and figured. It was taken at Kitembo, Lake Kivu, E. Belgian Congo, Nov. 1931. It is possible, but I think unlikely, that this form is the ♂ of *ruandana*. The F.W. band is much broader and more heavily marked with black than in this latter race, the postdiscal F.W. spots rather larger and continued posteriorly as far back as area 1*a*, the marginal F.W. spots more developed, the H.W. band also much broader and with no marked constriction towards the costa. More specimens, especially females, from the same area would be extremely interesting.

Since the above paragraph was written M. Le Cerf, who had been travelling in Morocco, returned to Paris and very kindly sent me the following particulars of the six males, including the one mentioned above, which have now been received from Kitembo:—

"Voici tous les détails de nos étiquettes:—

"Bulira, Kitembo, Lac Kivu, xi.1931, 1 ♂; viii.1932, 1 ♂; xi.1932 ♂♂.

"Lushasha, Kitembo, Lac Kivu, viii.1932, 1 ♂.

"Kirondo, Kitembo, Lac Kivu, ix.1932, 1 ♂.

"Tous ces exemplaires sont bien pareils entre eux, notamment pour la largeur de la bande terminale noire des ailes antérieures qui est notablement plus étroite que la bande fauve discale. Le No. 4, qui vient d'arriver et est encore sur l'étaloir, a les points fauves subterminaux des ailes postérieures un peu plus grands que chez les autres individus, mais il ne s'agit évidemment que d'une très faible modification individuelle, nullement raciale.

"Lushasha, Kirondo et Bulira, sont très rapprochées l'une de l'autre dans la vallé de la Luzira, petite rivière qui se jette dans le lac Kivu, entre Bobandana et Katana. Elle descend des montagnes boisées, parallèles au Lac, qui forment en majeure partie la région du 'Kitembo.' Les chasses ont été faites à l'altitude de 2·500 mètres environ, mais il y a des sommets atteignant 3·000 mètres à proximité immédiate.

"Tels sont les renseignements que je possède actuellement. Je souhaite qu'ils vous soient utiles et vous parviennent encore à temps pour que vous puissiez les inclure dans votre travail.—F. Le Cerf."

4. **Charaxes a. levicki,** subsp. n.—Plate 2, fig. 4—♂; fig. 3—♀. This race is described from a ♂ and ♀ kindly lent to me by Mr. J. Levick, F.E.S., after whom I have the pleasure of naming it. But for the locality I should have

hesitated to suggest that they belong to the same race, the ♀ being so much like *jacksoni* and the ♂ so very different from any known form of *C. a. ansorgei*, the female being among the largest and the male by far the smallest in any of these races.

Male.—The outer margin of the F.W. is deeply excavated, and the apical and anal areas more prominent than in any other male of *ansorgei*. The F.W. marginal spots are very strongly developed in area 1*a*, much less so in 2, 3, and 4, and again more strongly in 5 although far from attaining the size of the two in 1*a*. Thus the effect is that of a highly irregular series quite unlike any of the other males known to me. The band is very broad and the black markings within it, in areas 1*a*, 2, and 3, are nearly as in *ruandana*, but the postdiscal spots are larger than in the latter race and about equal to those of *ansorgei*. The F.W. basal area is lighter in tint than in any other male of the species, but the black markings along the internal border of the band contrast strongly with its pale orange-brown colour.

The H.W. pattern is very different from that of any known male of *ansorgei*. The band which, up to vein 7, is bluer than in other races, takes on a tawny tint in areas 7 and 8, the two marks being separated from each other by strong pigmentation along the vein, while the bluish-white mark in area 6 is much reduced, forming a marked constriction between the two sections. The whole effect is very characteristic and unlike the other races. The submarginal spots are also much larger as is the green marginal mark at the anal angle of the wing. On the under surface, the H.W. band is not narrow as in *ruandana* and the mark beyond the cell is small and causes hardly any constriction.

The female upper surface closely resembles *jacksoni*, but the F.W. basal area is even darker and the band whiter, so that the mimetic likeness to *brutus* is stronger. The F.W. postdiscal spots are considerably larger than in *jacksoni* and the submarginal H.W. spots rather smaller.

Length of F.W. of specimens represented on pl. 2, fig. 4, ♂—37·0 mm.; fig. 3, ♀—50·0 mm.

Examples studied :—Lake Nyasa, E. Africa, No. 969, ♂, Coll. J. Levick (ex Coll. Oberthür), Type; Manow, N. of L. Nyasa and E. of New Langenburg, No. 970, ♀, Coll. J. Levick (ex Coll. Oberthür), Allotype.

NEUE BORKENKÄFER (COL., SCOLYTIDAE) AUS AFRICA (Nachtrag V.)*

Von

Hans Eggers, Stolberg (*Harz*).

Aus dem British Museum und dem Imperial Institute of Entomology, London, erhielt ich wiederholt Sendungen africanischer Scolytidae, unter denen sich die nachstehend beschriebenen 2 neuen Gattungen und 10 neuen Arten befanden.

159. **Dactylipalpus orientalis,** sp. n.

Cylindrisch, pechschwarz, mässig glänzend, kräftig sculptiert, spärlich behaart.

♀. In der Körperform dem *D. imitans*, m., aus Kamerun am ähnlichsten.

Kopf wie bei der westlichen Art, zwischen den Augen flach gedrückt, unter den Augen seitlich verbreitert, mit einer Vertiefung über den Mundteilen. Die ganze Fläche gross

* 60 neue Borkenkäfer aus Africa, 1919, *Ent. Blätt.*, **15**, 1920, *loc. cit.*, **16**; Nachtrag I. 1922, *Ent. Blätt.*, **18**; Nachtrag II. 1924, *Ent. Blätt.*, **20**; Nachtrag III. 1927, *Rev. zool. afric.*, **15**; Nachtrag IV. 1932, *Rev. Zool. Bot. Afric.*, **22**.

Alfred Robinson, phot. Nat. size. John Bale Sons & Danielsson, Ltd London

CHARAXES ANSORGEI ANSORGEI, Rothsch., ♂ – 1, ♀ 2, N. E. Uganda & Kenya, W. of Rift Valley;
C. A. JACKSONI, subsp.n. ♂ – 3, ♀ – 4, Kenya, E. side of Rift Valley.

INST.
ENTOM.

Alfred Robinson, phot. Nat. size. John Bale, Sons & Danielsson, Ltd London

CHARAXES ANSORGEI RUANDANA, Talb., ♂ - 1, ♀ - 2, N. W. & N. of L. Tanganyika, & W. Uganda;
C. A. LEVICKI, subsp. n. ♀ - 3, ♂ - 4, L. Nyasa, ♀ from Manow, N. of Lake.

IMP. INST.
1 JAN 1933
ENTOM.

und deutlich punktiert, die unregelmässig geformten Punkte sind dicht gestellt und fliessen im unteren Teile oft ineinander. Ziemlich dicht und mässig lang hell beborstet, über den Mundteilen dichter und länger.

Halsschild viel breiter als lang, von den fast rechtwinkeligen Hinterecken fast parallelseitig im ersten Drittel der Seiten, dann im Bogen nach vorn verrundet, der Vorderrand fast gerade. Oben flach gewölbt mit flachen, grossen, unregelmässigen Punkten, dazwischen flach gehöckert; seitlich sind die flachen Höcker unter sich getrennt und fast rund, oben vor der Basis gehen sie in flachen Runzeln in einander über. Eine fast gerade, eingedrückte Linie befindet sich in einem flachen Quereindruck etwa 1/3 der Halsschildlänge hinter dem Vorderrand. Vor dieser Querlinie äusserst fein punktiert und ohne Höcker und Runzeln, dagegen hier länger gelb beborstet als auf dem übrigen Halsschild.

Flügeldecken kaum breiter als das Halsschild an der Basis und doppelt so lang, parallelseitig, hinten kräftig gerundet. Von der Basis an oben leicht in der Länge gewölbt, der Absturz wie bei *D. imitans* flacher abgewölbt als bei *camerunus*. Punktreihen mit grossen, flachen, unregelmässig stehenden Punkten in breiten, flachen Furchen, welche im Basalteil durch starke, dicht stehende Höcker undeutlich werden. Die Zwischenräume sind im vorderen Drittel unregelmässig mit mässig starken Querhöckern besetzt, im zweiten Drittel werden die Höcker rund und abgestumpft und stehen meist unregelmässig in ein bis 2 Reihen; auf dem Absturz verflachen sie gänzlich und gehen in unregelmässige Runzeln und kleinere Höcker über. Die Zwischenräume sind spärlich mit kurzen, feinen, hellen Borsten in ein oder 2 unregelmässigen Reihen besetzt; die Bekleidung ist aber kaum sichtbar.

Von *D. imitans* ♀ unterscheidet ihn die stärkere Skulptur, die viel stärkeren, aber weniger zahlreichen Höcker der Flügeldecken, die stärker ausgeprägten Furchen der Punktreihen. Die Körperform ist dagegen ganz die gleiche.

♂: wirkt noch cylindrischer, weil das Halsschild fast parallelseitig ist mit einigen stärkeren Höckern an den Vorderecken; doch ist es etwas gedrungener im Körperbau als das ♂ von *D. camerunus*. (das ♂ von *imitans* ist nicht bekannt und kann zum Vergleich nicht herangezogen werden.)

Kopf etwas mehr eingedrückt wie beim ♀, über den Mundteilen noch etwas mehr verbreitert, und seitlich über dem Fühleransatz deutlich gekantet.

Halsschild viel breiter als lang, seitlich fast parallelseitig. Vorderecken etwas vorgezogen und breit abgerundet, sodass die Mitte des Vorderrandes etwas zurücktritt, dahinter die Oberseite leicht eingedrückt, im übrigen flach gewölbt; fast gleichmässig und dicht mit kleineren Höckern besetzt, nur im Mittelfelde deutlich punktiert und zwischen diesen Punkten nicht gehöckert, ziemlich dicht, anliegend fein behaart.

Flügeldecken kaum breiter und $2\frac{1}{2}$ mal so lang wie Halsschild, parallelseitig, hinten verschmälert gerundet. Oben etwas länger gerade aushaltend und dann ebenso abgewölbt wie beim ♀. Punktreihen hinter der Basis nur einreihig in Höckerfeld von kleinen, z.T. quer gezogenen Höckern, dann bis zum Absturz stark verbreitert in flacher Furche mit 2–3 unregelmässigen Reihen grosser Punkte. Die Zwischenräume sind vom ersten Drittel an schmal erhöht, viel schmäler als die Punktreihenfurchen, mit kräftigen Höckern, welche vorne quergezogen, hinten rund und abgestumpft in unregelmässigen einfachen Reihen stehen und vorne zweireihig, hinten einreihig kurz behaart sind. Auf dem Absturz verschwinden die Höckerreihen mehr oder weniger und bilden mit den Runzeln und Punkten der Punktreihen ein unübersichtliches Gewirr.

Länge: ♀ 8 mm., ♂ 8 mm. Breite: ♀ 3·8 mm., ♂ 3·5 mm.

Fundort: ♂. Type: UGANDA: Mpanga forest, Toro, 4800 Fuss hoch, 13.–23.xi.1911 (*S. A. Neave*).

♀. Type: N. RHODESIA: Kashitu, N. of Broken Hill, xi.1918 (*H. C. Dollman*).

XIV. **Pseudodiamerus,** gen. n. (Hylesini).

Kurz gebaut, ziemlich stark punktiert, mit Schuppen bedeckt.

Kopf flach gewölbt, ohne Rüssel, Augen langoval, ganzrandig, Fühler mit langem Schaft, siebengliederiger langer Geissel und compacter ungegliederter Keule.

Halsschild gewölbt, mit Seitenkante in der hinteren Hälfte, punktiert, ohne Höcker.

Schildchen nicht zu erkennen.

Flügeldecken mit erhabenem, gehöckerten Basalrand, tief in Reihen punktiert, kurz gedrungen, cylindrisch, hinten einfach abgewölbt, ohne Schulterbeule und deutlichen Hinterrand.

Vorderhüften gross, sich berührend, Mittel- und Hinterhüften klein und weit getrennt.

Vorderschienen an dem Ende der Innenkante in eine Spitze auslaufend, Aussenseite vor dem Ende mit einem grösseren und einem etwas schwächeren Zahn. Mittel- und Hinterschienen aussen leicht gebogen und mit 5–6 Zähnen besetzt, Tarsen von 1–3 in der Grösse etwas aber wenig länger werdend.

Unterscheidet sich von *Diamerus* durch den nicht ausgeprägten Rüssel, den stark gehöckerten Basalrand der Flügeldecken, der bei *Diamerus* meist einfach gekantet oder nur leicht gewellt ist, den unter der Schulterbeule nicht ausgeschnittenen Seitenrand der Flügeldecken. Ausserdem hat *Diamerus* weit getrennte Vorderhüften und an dem Ende der Aussenkante der Vorderschiene einen stark gekrümmten Zahn, während derselbe bei der neuen Gattung gerade seitlich absteht.

160. **Pseudodiamerus striatus,** sp. n.

Plump, kurz cylindrisch, vorn verengt, glänzend, pechschwarz, dicht hellbraun beschuppt, stark punktiert.

Kopf breit, gewölbt beim ♀, beim ♂ leicht eingedrückt und mit schwachem Längskiel, dicht fein punktiert und gelbbraun behaart.

Halsschild so lang wie an der Basis breit, an den Hinterecken leicht gerundet, mit schräg nach unten gerichteter Seitenkante in der hinteren Hälfte. Seitlich nach vorn schon bis zur Mitte verschmälert, dann noch mehr zum Vorderrand verengt, ohne Einschnürung seitlich oder oben hinter dem Vorderrande, der nicht kantig oder gehöckert ist. Die ganze Oberseite gleichmässig und kräftig punktiert, ohne Mittellinie, und fein hellbraun abstehend beschuppt, sodass die glänzende Chitinhülle überall deutlich sichtbar ist.

Flügeldecken breiter als Halsschild an der Basis und etwa doppelt so lang wie dasselbe, parallelseitig, hinten sehr kurz und breit abgerundet. Punktreihen mit grossen, tiefen Punkten weitläufig besetzt, die erste stärker vertieft als die andern. Die Zwischenräume schmäler als die Punktreihen, dicht punktuliert und unregelmässig zwei- bis dreireihig abstehend kurz beschuppt, sodass auch hier der Glanz der Flügeldecken deutlich durchscheint. Absturz steil abgewölbt, der zweite Zwischenraum hier etwas verschmälert und vertieft.

Länge: fast 3 mm.

Fundort: Angola. ♂ Type im British Museum, ♀ Cotype in Sammlung Eggers.

XV. **Pseudophloeotribus,** gen. n. (Hylesini).

In der Form dem Genus *Phloeotribus* sehr ähnlich, aber durch die Fühlerform schon deutlich geschieden.

Kurz oval geformt, deutlich punktiert, beschuppt.

Kopf flach gewölbt, ohne Rüssel, Augen langoval, nur schwach ausgerandet. Fühlerschaft mässig lang, ebenso die aus 7 Gliedern bestehende Geissel, Keule eiförmig mit 6 leicht gebogenen Nähten.

Halsschild flach gewölbt, seitlich nicht gerandet, Basis undeutlich gerandet, punktiert und zerstreut gehöckert, mit einigen stärkeren Höckern seitlich am Vorderrand; mit kurzen Schuppen mässig dicht besetzt.

Schildchen sehr klein.

Flügeldecken mit erhabenem, mit Höckern besetzten Vorderrand, ohne deutlichen Seiten- oder Hinterrand, gut gewölbt, hinten ohne besondere Abzeichen abgewölbt. Punktreihen in breiten, flachen Streifen, Zwischenräume schmal, fein gehöckert und mit geneigten, mässig langen, dicken Borsten reihig besetzt.

Hüften weit getrennt, das dritte Paar am wenigsten, Vorderhüften kugelig und lang behaart.

Vorderschienen vorne dreieckig verbreitert und leicht gezähnt ohne grössere Haken, Mittel- und Hinterschienen gerundet, dicht mit kurzen Zähnen besetzt.

Alle Tarsen gleichmässig kurz.

Die ganze Unterseite, besonders die Aussenkante der Schienen und die Ränder der Segmente dicht mit Borsten besetzt.

161. **Pseudophloeotribus africanus,** sp. n.

In Form und Grösse dem *Phloeotribus subovalis,* Bldf., aus Mittelamerica sehr ähnlich, kurzoval, braun, mässig glänzend, deutlich aber nicht deckend beschuppt und beborstet.

Kopf gewölbt, über den Augen kahl, fein hautartig genetzt und sehr fein punktiert, unter den Augen länger hell behaart und mit feinen Körnchen besetzt.

Halsschild breiter als lang, seitlich kräftig gerundet, ohne Einschnürung hinter dem Vorderrand. Die Mitte des Vorderrandes unbewehrt, seitlich über den Augen stehen dagegen drei scharfe Zähne, dahinter etwa in der halben Länge der Fläche noch einige ähnlich starke. Sonst ist die Oberfläche glänzend, fein punktiert und weitläufig mit Höckern besetzt, ausserdem mit borstenähnlichen, ziemlich kurzen Schuppen nicht dicht besetzt.

Schildchen sehr klein, in den erhöhten Vorderrand der Flügeldecken eingepasst.

Flügeldecken im leichten Bogen bis zur Mitte erweitert und dann verschmälert abgerundet, an der Basis wenig breiter und doppelt so lang wie das Halsschild. Vorderrand erhaben, neben der Naht ganzrandig, nach der Seite zu gezähnt. Die gut gewölbte Oberseite zeigt deutliche Punkte in den Reihen in flachen breiten Streifen, die Zwischenräume sind schmal erhaben, mit einreihigen Höckern und geneigten hellen Borsten besetzt; nur der zweite und fünfte Zwischenraum tragen im Basalteil eine kurze Doppelreihe, auf der dritten geht diese Doppelreihe bis zur Mitte.

Länge: fast 2 mm.

Fundort: N. Rhodesia: Livingstone, Zambesi R., 5.iii.1913 (*H. C. Dollman*). Type im British Museum.

162. **Pseudophloeotribus rhodesianus,** sp. n.

Grösser als die Gattungstype, cylindrisch geformt, pechschwarz mit pechbraunen Tarsen und Fühlern, mässig glänzend, ziemlich dicht behaart, Flügeldecken auf den Zwischenräumen von der Basis an gehöckert.

Kopf gewölbt, dicht punktiert, fein und kurz behaart.

Halsschild breiter als lang, von den fast rechtwinkeligen Hinterecken im Bogen nach vorne abgerundet, hinter dem Vorderrande nicht eingeschnürt. Vorderrand trägt bei einigen Stücken 6 einzeln stehende, grössere zurückgebogene Zähne in der Mitte, oder je 3 kleinere seitlich stehende, welche in der Mitte eine grössere Lücke freilassen. Oberseite flach gewölbt, dicht punktiert mit angedeuteter Mittellinie, dicht, kurz und dunkel behaart mit je einem längeren Schopf hellerer Haare im letzten Drittel seitlich der Mittellinie.

Flügeldecken ebenso breit und doppelt so lang wie das Halsschild, parallelseitig bis zum letzten Viertel, dann breit abgerundet, Reihenpunkte deutlich, rund in flachen Streifen, Zwischenräume flach gewölbt, mehrreihig fein punktiert und fein und kurz beschuppt. Die Zwischenräume der Oberfläche tragen von der leicht erhaben gerandeten Basis an jede eine Reihe von Höckern, die hinter der Mitte stärker werden. Auf dem ziemlich steilen Absturz sind die Höcker auf dem Nahtzwischenraum schwach, auf dem zweiten, welcher verschmälert ist, verschwinden sie ganz, auf dem dritten sind sie stärker; der vierte trägt hier keine Höcker und die seitlichen kleinere nur auf dem Absturz, vorne sind sie ohne Höcker.

Geschlechtsunterschiede sind an den Stücken nicht zu erkennen, wenn die Vorderrandhöcker in ihrer verschiedenen Stellung nicht als solche zu werten sind.

Länge: 3–3·5 mm.

Fundort: N. Rhodesia: (Mazabuka) an *Lonchocarpus* sp. 21.xi.1930 (*W. Allan*). Type und Cotypen im British Museum, Cotypen auch in Sammlung Eggers.

163. **Trogloditica squamosa,** sp. n.

Sehr ähnlich in Form, Farbe und Sculptur wie die Gattungstype *Tr. trahax*, Sampson, aus Siam, von der ich ein typisches Stück aus dem British Museum vergleichen konnte.

Kurzoval, pechschwarz mit teilweise grauen Schuppen im Basalseitenfeld des Halsschildes und pechbraunen Tarsen und Fühlern, matt aussehend infolge feiner, dichter, dunkler Beschuppung.

Kopf breit und flach gewölbt, mattglänzend, kaum sichtbar fein hautartig genetzt, mit spärlichen, sehr feinen Pünktchen, fein und spärlich anliegend behaart.

Halsschild breiter als lang, von den etwas abgestumpften Hinterecken fast im Kreisbogen zum Vorderrand verrundet. Vorderrand mit wenigen stumpfen Höckern in der Mitte. Hinterrand deutlich gekantet, von dem Flügeldeckenrand überdacht und in der Mitte tief gegen die Flügeldecken zurückgezogen. Oben flach gewölbt, hinter dem Vorderrand weitläufig mit Höckern besetzt, fast matt, fein und dicht punktiert, ohne Mittellinie, Vorderfeld und schmaler Streifen bis zur Basis schwarz, Seitenflächen fein anliegend grau beschuppt.

Schildchen nicht erkennbar.

Flügeldecken an der Basis etwas breiter als Halsschildbasis, bis etwa zur Mitte wenig verbreitert und dann wenig verschmälert, hinten breit abgestutzt aussehend, da der fünfte Zwischenraum etwas beulig vorgezogen ist, und der Hinterrand von da bis zur Naht einen ganz flachen Bogen bildet mit einer ganz schwachen Einkerbung an der Naht. Flügeldecken sind, von der Vorderecke bis zur Hinterecke gemessen, länger als zusammen breit, sind ziemlich steil im letzten Drittel abgewölbt und länger gebaut als bei *Tr. trahax*. Punktreihen stehen in vertieften schmalen Streifen, der siebente Streifen beginnt erst nach dem ersten Drittel hinter der nur angedeuteten Schulterbeule, wie bei der anderen Art. Zwischenräume ganz flach, dicht und fein punktiert und mit feinen anliegenden, schwarzbraunen, kurzen Schuppen bedeckt, sodass die Punktierung verdeckt wird. Basalrand mit grösseren, einzeln stehenden Breithöckern besetzt, Zwischenräume im Basalfeld mässig dicht gehöckert.

Vorderschienen im letzten Drittel stark verbreitert, mit 5–6 dichtstehenden Zähnen, Mittel- und Hinterschienen gebogen und bis über die Mitte dicht gezähnt.

Länge: 2–2·25 mm.

Fundort: N. Rhodesia: Mwengwa (27° 40′ Ost, 13° Süd), 7.viii.1914 (*H. C. Dollman*). Type und 2 Cotypen im British Museum, 2 Cotypen in Sammlung Eggers.

164. **Bothryperus niger,** sp. n.

Unterscheidet sich durch die gedrungene Figur, die vollkommen gleichmässige schwarze Farbe (auch der kurzen Behaarung) von den beiden länger gestreckten Arten *B. psaltes*, Haged., und *quadrioculatus*, m.

Elliptisch, hinten breit abgerundet, kohlschwarz mit braunen Fühlern und Tarsen- kurz behaart.

Kopf flach gewölbt, fein punktiert mit feiner, leichterhabener Mittellinie in der unteren Hälfte, fein und kurz behaart.

Halsschild so lang wie breit, Hinterecken fast rechtwinkelig, von da bis zur Mitte wenig und im Bogen verschmälert, dann bis zum Vorderrande stark verengt, aber nicht eingeschnürt. Oben dicht, rauh und fein punktiert mit feiner nicht erhabener Mittellinie und bedeckt mit kurzen, feinen Börstchen. Basis gegen das Schildchen ausgebogen, nur jederseits in der Mitte deutlich gerandet, in der Mitte und an den Ecken nicht gerandet.

Schildchen gross, rund.

Flügeldecken wenig breiter und 2½ mal so lang wie das Halsschild, seitlich fast parallel bis zum letzten Viertel, dann zur Naht breit abgerundet, während die andern beiden Arten stark verschmälert sind. Vorderrand erhaben mit Höckern, die nach den Seiten grösser werden und getrennter stehen. Am Schildchen ist der Vorderrand eingedrückt. Punktreihen leicht vertieft, die Punkte schwer erkennbar. Die Zwischenräume breit, flach, unregelmässig mehrreihig fein und runzelig punktiert und mit feiner, kurzer, dunkler Grundbehaarung bedeckt.

Länge: 1·8–2 mm.

Fundort: Uganda (*H. Hargreaves*), "boring in herbaceous part of Mudirira-stem." Type und Cotypen im British Museum, Cotypen in Sammlung Eggers.

165. **Peronophorus armatus,** sp. n.

♂: Langoval, pechschwarz mit pechbraunen Flügeldecken und Gliedmassen, Kopf und Halsschild rauh und matt, Flügeldecken glänzend, mit Binden und Flecken heller Schuppen gezeichnet und durch eine aufgetriebene Apicalbeule mit kurzer Spitze von der Gattungstype *P. brevicollis* deutlich verschieden.

Kopf matt und fein punktuliert, über den Augen gewölbt, unter denselben breit eingedrückt mit angedeuteter Mittellinie in diesem Eindruck, dessen gewölbte Ränder mit längeren, hellen Haaren besetzt sind.

Halsschild fast doppelt so breit wie lang, an der Basis am breitesten, seitlich stark gerundet, ohne Einschnürung hinter dem Vorderrande. Oberseite gewölbt; matt, flach, gross und verworren punktiert, dazwischen ganz fein gerunzelt. Vorderrand einzeln lang behaart und in der Mitte mit 8 einzelnstehenden kleinen Höckern besetzt, daneben zu beiden Seiten je 2 starke Zähne (an der Stelle der Vorderecken), hinter diesen etwa auf der Mitte jeder Hälfte des durch eine angedeutete Mittellinie geteilten Halsschildes noch in 3 unregelmässigen, kurzen Querreihen je 2–3 grössere und einige kleinere Zähne und Höcker. Das Mittelfeld zwischen diesen Höckern trägt kurze, schwarze borstige Schuppen, die Seiten von den Höckern bis zur undeutlichen Seitenkante kurze anliegende helle Borsten.

Schildchen ist nicht zu sehen.

Flügeldecken wenig breiter als Halsschild an der Basis und mehr als doppelt so lang wie dieses, fast parallelseitig, erst vom letzten Drittel an verschmälert abgerundet. Oben in der Quere flach gewölbt, von der Mitte an flach abgewölbt mit einer kräftigen Apikalbeule mit kurzer Spitze auf dem Absturz des fünften Zwischenraumes. Vorderrand stark erhaben und mit eng gestellten breiten Höckern besetzt. Basalfeld dahinter in mehreren unregelmässigen Reihen etwas schwächer gehöckert. Punktreihen heben sich im Basal,

feld schwach ab, auf der übrigen Fläche tiefer mit grösseren Punkten punktiert. Zwischenräume fein und unregelmässig punktiert, die Punkte durch Bekleidung verdeckt. Hinter dem Basalhöckerfeld eine Querbinde heller kurzer, anliegender Börstchen, das breite Mittelstück dunkel beschuppt und der Absturz mit hellen, kurzen Schuppen dichter besetzt. Vom Beginn des zweiten Drittels an stehen unregelmässig verteilt auf den Zwischenräumen kurze und sehr lange, spitze Stacheln, meistens dunkel gefärbt, auf der Naht und gegen das Ende der Flügeldecken untermischt mit gelben. Hinterrand der Flügeldecken und Segmente des Hinterleibes dicht hell behaart.

Länge: 3·5 mm. Breite 1·9 mm.

Fundort: Port. Ost Africa: (Ankuaze, 26.ix.1921), (*C. B. Hardenberg*). Type im British Museum.

Nyasaland: (Chiromo, xi.1919), (*R. C. Wood*). 1 Cotype im British Museum.

166. **Peronophorus pondoanus,** sp. n.

♂: Langoval, pechschwarz mit pechbraunen Gliedmassen, mässig glänzend, mehrfarbig anliegend fein beschuppt und behaart, mit Reihen feiner dunkler Stacheln auf der zweiten Hälfte der Flügeldecken.

Kopf über den Augen gewölbt, fein und dicht punktiert, zwischen den Augen und Mundteilen breit eingedrückt und rundum mit einzelnen langen, braunen Haaren besetzt.

Halsschild viel breiter als lang, seitlich nur wenig gebogen und vorn breit abgerundet. Oben flach gewölbt, glänzend, runzelig, mit feinen, an der Basis grösseren Punkten. Vorderrand unbewehrt, dahinter in der Mitte mit spärlichen sehr feinen Körnchen, im Seitenfeld hinter den Vorderecken dichter mit mässig grossen Höckern besetzt; im Mittelfeld äusserst fein, seitlich und im Basalteil länger und dichter gelblich behaart, an den Vorderecken mit einzelnen, dunklen, langen Haaren besetzt.

Schildchen unsichtbar.

Flügeldecken ebenso breit und 2½ mal so lang wie Halsschild, parallelseitig bis zur Mitte, dann langsam verschmälert und abgerundet. Oben weniger auf dem Absturz abgeflacht wie die vorige Art und nur mit einer leichten Andeutung einer Apicalbeule. Vorderrand nur wenig erhaben und flach gehöckert, auch die Basalfläche dahinter zeigt nur kleinere Höcker. Punktreihen nur klein und flach punktiert, Zwischenräume fein gerunzelt und mit mehrreihigen anliegenden Schuppen dicht bekleidet, welche in der ersten Hälfte beiderseits der Naht schwarzbraun, seitlich und in der hinteren Hälfte gelbbraun gefärbt sind. Von der Mitte an tragen die Zwischenräume einzeln gestellte gleichmässig lange und dünne schwarzbraune Stacheln welche auf dem zweiten Zwischenraum am Beginn des Absturzes unterbrochen sind und ebenso auf dem 4.–6. Zwischenraum hinter der Apicalbeule verschwinden. Hinterrand länger hellgelb beborstet.

Länge: 3 mm.

Fundort: Südafrica: Pondoland, Port St. Johns, ix.1923 (*R. E. Turner*). Type im British Museum.

167. **Hapalogenius bimaculatus,** sp. n.

Klein, oval, mit verschmälertem Halsschild und sehr breit abgerundeten Flügeldecken, mässig glänzend, braun mit feinen, hellen Schuppen und Härchen dicht bekleidet, auf der Abwölbung der Flügeldecken beiderseits der Naht sind Schuppen und Haare auf einem runden Fleck schwarzbraun.

Kopf leicht gewölbt, anscheinend äusserst fein punktuliert, Mittelfeld zwischen den Augen dicht mit hellen Haaren und Schüppchen besetzt. Augen gross und breit, am Fühleransatz nur leicht ausgerandet. Fühlergeissel fein behaart, Keule länglich mit 2 deutlichen Quernähten.

Halsschild so lang wie breit, von den leicht gerundeten Hinterecken fast konisch bis zum Vorderrande auf $\frac{2}{3}$ der Basisbreite verschmälert, hinter dem Vorderrande leicht eingeschnürt. Vorderrand mit einem Kranz heller Schuppen besetzt. Oben fein punktiert und mit gemischten, hellen Härchen und kurzen, abgerundeten Schuppen bedeckt. Sehr feine Mittellinie auf einem vor der Basis durch beiderseitigen leichten Eindruck gebildeten, schmalen Mittelfelde.

Schildchen nicht sichtbar.

Flügeldecken breiter und fast doppelt so lang wie das Halsschild. Basis scharf gerandet, neben der Naht bis zum zweiten Zwischenraum ganzrandig, von da bis zum Seitenrand dicht mit kleinen Höckern besetzt. Punktreihen streifig eingedrückt mit grösseren Punkten und äusserst feinen, kurzen Härchen. Zwischenräume sind flach, fein runzelig gekörnt und tragen eine Reihe deutlicher Schuppen zwischen 2 Reihen gleichfarbiger feiner Haare. Die Schuppen und Haare sind hell, fast weiss, mit Ausnahme zweier runder Flecke auf dem gewölbten letzten Drittel, welche von den hell behaarten und beschuppten Naht- und Randstreifen eingefasst werden, diese Flecken tragen schwarzbraune Haare und Schuppen. Flügeldecken seitlich fast parallel, ohne Verschmälerung breit abgerundet.

Länge: 1·4 mm.

Fundort: Natal: (Weenen), (*H. P. Thomasset*). Type im British Museum.

Durch die eigentümlichen dunklen Flecken von den beiden anderen Arten *pusillus*, Gerst., und *fuscipennis*, Chap., leicht zu unterscheiden.

168. **Thamnurgus lobeliae**, sp. n.

Zylindrisch, pechschwarz (unausgefärbt mit pechbraunen Streifen auf den Flügeldecken), mit hellbraunen Haaren, mässig glänzend.

Kopf breit, fein und dicht punktiert und mässig lang behaart.

Halsschild länger als breit, hinten fast parallelseitig, in der vorderen Hälfte stark verschmälert und abgerundet. Beim ♀ ist das Halsschild länger und schmäler als beim ♂. Oberseite fein runzelig und ziemlich dicht punktiert und mit sehr langen, zurückgestrichenen Haaren mässig dicht bekleidet. Schildchen klein, rund.

Flügeldecken beim ♂ wenig, beim ♀ viel breiter als Halsschild, fast parallelseitig, nach hinten kaum merklich erweitert und hinten breit abgerundet mit fast geradem Hinterrand. Quer flach gewölbt, in der Länge fast eben und hinten steil abgewölbt. Punktreihen und Zwischenräume fein punktiert in etwas runzeliger Fläche, Punkte oft von verschiedener Grösse und nicht ganz regelmässig gereiht, Reihen nicht vertieft, Zwischenräume ganz flach. Reihen- und Zwischenraumpunkte tragen lange, anliegende, bräunliche Haare. Absturz breit (bis zum 3. Zwischenraum einschliesslich) flach und kreisförmig eingedrückt beim ♀; beim ♂ ist die Nahtfläche flach gehoben, sodass eine deutliche Furche sich zeigt. Der Seitenrand ist nur wenig angedeutet. Die Absturzfläche ist stärker glänzend, kaum sichtbar und spärlich punktiert und trägt nur einige feine, abstehende Haare auf dem Nahtzwischenraum.

Sämtliche Schienen sind aussen ziemlich scharf bedornt.

Länge: 2–2·6 mm.

Fundort: Uganda: Ruwenzori Mt., 1931, "on *Lobelia* flowers." Type (♂ und ♀) im British Museum; ferner Kigo (11,000 ft., Aug. 1931, "on *Lobelia deckeni*" und Bujuku, 12,000 ft., 1931, "On *Lobelia* seeds" (*G. L. R. Hancock*). Cotypen auch in Sammlung Eggers.

Von der anderen afrikanischen Art *T. africanus* durch schlankere Form, schwächere Punktierung und die langen, braunen Haare unterschieden.

A NEW SPECIES OF *APHAENOGASTER* (HYM. FORMICIDAE) FROM INDIA

By Horace Donisthorpe, F.Z.S., F.E.S., etc.

Aphaenogaster (Attomyrma) beesoni, sp. n.

☿. Mandibles, antennae, part of anterior portion of head, petiole and post petiole brownish-yellow, rest of head and thorax black, gaster brown, lighter at apex, legs yellow. Body clothed with longer and shorter widely scattered yellow bristles.

Head dull longitudinally striate (more markedly so round the cheeks, along the inner sides of the eyes, and along the frontal carinae and front) with cross striation forming a raised network, the ground surface covered with small granulated punctures; *mandibles* longitudinally striate; *clypeus* longitudinally striate; *frontal area* deep, smooth; *antennae* long and slender, *funiculus* with 1st joint a little longer than the following 6, which are of about equal length, and a little longer than broad, joints 8–10 of the funiculus longer, and of about equal length, last joint about as long as the two preceding taken together.

Thorax with dorsal surface somewhat shining; *pronotum* covered on dorsal surface with numerous small very shallow round punctures arranged in transverse rows, and a few raised transverse ridges posteriorly, sides more rugose and with more and stronger raised transverse ridges; *promesonotal suture* well marked; *mesonotum* with anterior portion raised forming a lozenge-shaped projection (Bingham describes this as a ridge or crest in *A. cristata*, Forel and *A. smythiesi*, Forel), its anterior border longitudinally striate, posterior dorsal portion, and sides of the mesonotum, with similar puncturation to that of the pronotum; *meso-epinotal suture* well marked; *epinotum* transversely striate on the dorsal surface and more finely so between the *spines* which are short, acute, and pointing slightly outwards; sides of the *epinotum* with similar puncturation to that of the mesonotum; nodes of the *petiole* and *post petiole* smooth and shining on dorsal surface, finely punctured at sides; the *petiole* is furnished with a rather long pedicel; *gaster* smooth and shining with a few short longitudinal striae at the junction with the post petiole. *Tibiae* furnished with short decumbent whitish hairs.

Long. 4·4–5·7 mm.

Aphaenogaster beesoni comes nearest to *A. smythiesi* from which it differs in colour and puncturation, etc. The latter is much more shining, the posterior part of the head and pronotum are almost smooth, the puncturation of the body is quite different, and the insect is somewhat more hairy, etc.

Described from a number of ☿☿ taken by Mr. C. F. C. Beeson under stones at heights of 5500 ft., on May 14th, 1924, at Simla, Kotkhal, and 8000 ft., Kalala.

Type in the British Museum.

The subgenus *Attomyrma* of *Aphaenogaster* inhabits the Holarctic Region, including the shores of the Mediterranean, the Himalayas, and Mexico. It is also found as a fossil in amber. One species occurs in Madagascar which is very closely related to the European *A. subterranea*, Lat., and is probably an introduction.

The genus is not represented in the British Isles.

NEW GEOMETRIDAE (LEP.) FROM BURU

By Louis B. Prout, F.E.S.

The following species and subspecies were collected for the late Mr. J. J. Joicey by Messrs. C., F. and J. Pratt on the expedition to which I referred almost simultaneously in *Treubia*, **7** : 424, and *Bull. Hill Mus.*, **3** : 23–42. In order to render the catalogue of known Buru Geometridae, given in the first-named publication, as complete as possible, the names proposed for the new species were inserted in their places; but on account of subsequent vicissitudes the *Bulletin of the Hill Museum* was never able to describe them all, and some have remained absolute "nomina nuda."

Subfamily Oenochrominae.

1. **Alex continuaria brunnescens,** subsp. n.

Duller and more brownish-rufous than name-typical *continuaria* (Walk., 1866) from Ceram. Both wings beneath with the dark irroration and strigulation always strong, especially noticeable on fore-wing beneath. Fore-wing above with the antemedian line generally well developed.

Kako Tagalago, 2700 ft., May 1922, holotype and two paratype ♂♂, allotype ♀. Gamoe 'Mrapat, 5000 ft., March–April 1922, 2 ♀♀.

Subfamily Hemitheinae.

2. **Hypodoxa involuta,** sp. n.

♂, 44–46 mm. Related to *lichenosa* and *leprosa* (Warr., 1907), from New Guinea, but with terminal joint of palpus longer—almost as in *emiliaria* (Guen., 1858)—pectinations longer (nearly 4). Head pale green, face mixed with red-brown below. Palpus variegated. Thorax and abdomen concolorous with adjacent parts of wings. Hair in front of fore coxa red.

Fore-wing with SC_1 connected or anastomosing slightly with *C*, SC_2 anastomosing (sometimes connected) with SC_1; pale green, with an irroration of dark scales (olive-green or purple-grey or even blackish); rufous patches, variable in strength, proximally to the antemedian and distally to the postmedian (especially about the fold), the subterminal proximally more or less filled in with rufous, at least in anterior part; lines much as in *emiliaria*, lunules of antemedian deeper, approaching those of *leprosa*, the posterior approach of postmedian to antemedian rather more gradual than in *emiliaria*; cell-mark as in the allies.—*Hind-wing* in general similar to those of *leprosa* and *lichenosa*.—Underside extremely like that of *lichenosa*, the dark borders a little less black, generally broader and less sharply defined. In dark aberrations some additional suffusion in nearly the entire proximal part of fore-wing.

♀, 52–53 mm. Abdomen orange laterally. Thorax mixed, abdomen tinged, with orange beneath. Both wings—especially the hind—more strongly suffused with rufous than in the ♂♂, the purple-grey irroration also strong and dark (as in some ♂ aberrations), especially in a band between postmedian and subterminal; abdominal fringe of hind-wing orange.—Underside closely like that of *emiliaria*, cell-mark of fore-wing rather thin and weak.

Gamoe 'Mrapat, 5000 ft., March–April 1922, 17 ♂♂, 2 ♀♀.

Variable like all of the group.

As ♂-form **perplexa,** form. nov., I describe the single ♂ brought from Kako Tagalago, 2700 ft. Size and upperside coloration of typical ♂, abdomen, abdominal fringe and entire underside as in the ♀.

Subfamily Sterrhinae.

3. **Anisodes (Perixera) nepheloscia,** sp.n.

♂, 40 mm. Very near *pauper*, Butl. (1887). Palpus with terminal joint rather longer. Head, body and wings of similar tone—whitish ochreous with flesh-coloured suffusions.

Fore-wing with all the markings stronger than in *pauper*, notably the black cell-dot and terminal dots and the olive-grey median shade and spots proximally to the subterminal; median shade less sinuous than in *pauper* but more oblique, meeting the antemedian dot.—*Hind-wing* with similar accentuation of the markings; the discal ocellus larger than in normal *pauper*; the shade beyond it broad and strong.—Underside more sharply marked than in *pauper*.

Kako Tagalago, 2700 ft., May 1922, 1 ♂.

4. **Problepsis evanida,** sp. n.

♂♀, 36–40 mm. Head and body white, face and dorsal part of abdomen merely with a slight smoky tinge. Palpus rather short, 2nd joint slightly curved; blackish, beneath paler, at tip partly white. Antennal shaft rather stout, white proximally, infuscated distally; pectinations in ♂ 3–4, infuscated; ciliation in ♀ nearly 1. Fore and middle legs partly infuscated; hind-leg white, tibia in ♂ broadly dilated, fringe of upperside and the short knee-pencil white, femoro-tibial pencil tinged with brown, tarsus half or scarcely over.

Fore-wing with SC_1 stalked slightly beyond the areole, or connate, R_2 from not greatly before middle of *DC*; white, in proximal part with scattered silvery scales; costal edge narrowly brown-grey; lines grey; antemedian feeble but fairly thick, from beyond $\frac{1}{3}$ hind margin, vanishing anteriorly; median not quite so thick as in *magna*, Warr. (1906), running from hind margin to ocellus; postmedian placed as in *magna*, or slightly more distal, less sinuous, the usual strong proximal curve beginning at the radials, the anterior part, however, almost entirely obsolete; no subterminal shades, no terminal line; discal ocellus broad-oval, but nearly obsolete, outlined by discontinuous silvery scales; fringe distally brownish with a sprinkling of metallic scales.—*Hind-wing* white, proximally and again beyond the postmedian with metallic irroration; ocellus very indefinite, fairly broad, its proximal edge indicated by cessation of the basal irroration, its distal by a vague band of silvery irroration which, starting at base of R_1, runs obliquely excurved to M_2, bends outward along that vein and terminates at postmedian line; median line indicated posteriorly, but usually slender; postmedian nearly parallel with termen; fringe as on fore-wing.—Underside white; costal margin of fore-wing light ochreous brown; fringes as above.

Kako Tagalago, 2700 ft., May 1922, 24 ♂♂, 1 ♀ (allotype); Gamoe 'Mrapat, 5000 ft., 2 ♂♂.

Perhaps near *argentea*, Warr. (1900, Dammer I.), of which the unique type is a rather poor ♀; larger, without the subterminal dark irroration, but with darkened costa, fringe-tips and lines.

Subfamily Larentiinae.

5. **Xanthorhoe simplicata,** sp. n.

♂, 28 mm. Head and body greyish-fuscous, irregularly marked with red above. Antenna pectinate (only the stumps remaining).

Fore-wing pale grey, costal margin tinged with ochreous brown; markings fuscous, mixed with red and black; basal patch rather small, not solid, its distal edge somewhat excurved; a vague double line of dark shading between this and median band;

median band 5 mm. wide at costa, not quite 3 at hind margin, its proximal edge curved and with a small subcostal tooth, its distal incurved between the radials and between R_3 and hind margin, a central patch of the ground-colour between costa and M, containing the minute cell-dot, and a smaller, more irrorated patch posteriorly; the distal boundary-line of the anterior central patch very oblique outward from costa and sharply bent subcostally (as in *callisthenes*, Prout, 1922); line beyond median band very slight and interrupted, chiefly expressed by teeth on the veins; costal blotch near apex strongly developed; narrow and irregular dark terminal shading, with whitish subterminal lunules near its proximal edge.—*Hind-wing* rather dark grey, with large cell-dot and weak wavy lines beyond (strongest at abdominal margin).—Both wings beneath dark grey, with rather large cell-dot and feeble waved lines as far as postmedian; fore-wing in anterior half with indistinct whitish subterminal dots.

Gamoe 'Mrapat, 5000 ft., March–April 1922, 1 ♂.

Intermediate between *callisthenes* and *subidaria* (Guen., 1858), nearer to the former except in size.

6. **Pomasia amplificata praelustris,** subsp. n.

♀, 24–26 mm. Considerably larger than *P. a. amplificata* (Walk., 1861, Borneo and Malay Peninsula), the bands and spots of the yellow ground-colour ampler, giving the insect a brighter appearance.

Fore-wing with the anterior half of subbasal and postmedian markings dark-mixed; mid-costal blotch rather large, with a pronounced distal projection in cellule 6; the yellow band beyond it with the distal projections much more pronounced than in *a. amplificata*; postmedian band more irregular (sub-interrupted) than in that.—*Hind-wing* with similar distinctions in the distal half of the wing.

Gamoe 'Mrapat, 5000 ft., April 1922, 2 ♂♂.

THREE INTERESTING APHIDS FROM THE FAR EAST

By Ryoichi Takahashi.

(*Department of Agriculture, Research Institute, Formosa.*)

Tuberaphis, gen. n.

Wingless viviparous ♀. Body with many well-developed wax-plates arranged in a row along the whole margin except between the antennae. Head short, fused with the prothorax, with 3 eminent blunt tubercles on the front. Antennal tubercles absent. Eyes of 3 facets. Antennae short, 5-jointed; the 3rd joint without sensoria; distal part of the last joint small. Pronotum distinctly defined from the mesonotum; meso- and metanota somewhat defined; basal abdominal segments fused together, the 8th abdominal segment separated. Cornicles very short, represented nearly as mere rings. Anal plate divided. Cauda constricted basally. Legs rather short, tarsi with 2 long somewhat knobbed hairs.

Genotype.—*Tuberaphis coreanus*, sp. n.

This genus is closely allied to *Cerataphis*, Licht., but differs from it in the following characters: (1) Head with 3 eminent tubercles on the front. (2) Head lacking wax-plates between the antennae. (3) Pronotum distinctly defined from the mesonotum.

Tuberaphis coreanus, sp. n.

Wingless viviparous ♀. Brownish-black in specimens preserved in alcohol. Body broadly oval, broadest at the basal part of abdomen, a little convex and with a few short setae on the dorsum, not strongly chitinised. Many eminent rather large oval or subcircular wax-plates arranged in a single row along the whole margin of body except between the antennae and, sometimes, on a small part near each eye; the wax-plates protruding, somewhat chitinised on the border, absent on the dorsum, smaller on the head and prothorax, especially on the former, and the numbers about as follows: head—11 or 12 on one side; prothorax—12 on one side; mesothorax—7 or 8 on one side; metathorax and basal 7 abdominal segments—50 on one side; 8th abdominal segment—20 in all. Head short, fused with the prothorax, sometimes with about 2–4 small wax-plates near the margin in front of each eye; the front with 3 stout blunt tubercles directed forwards and arranged in a transverse row between the antennae, of which the middle one is largest, wider than long, a little divided apically, rounded apically, slightly constricted about the middle, with a short stout apical seta on each apical lobe; the lateral tubercles on the front as long as the middle, a little longer than wide, rounded at the distal end,

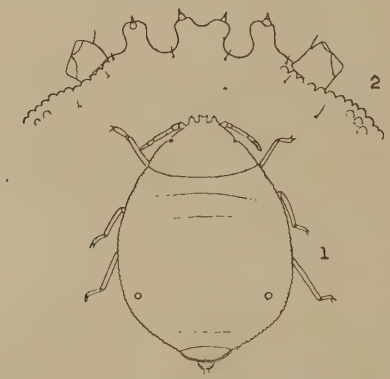

Fig. 1.—*Tuberaphis coreanus*, sp. n. 1. Wingless viviparous female. 2. Anterior part of head of same.

with a short stout seta at the tip. Head and pronotum with 3 pairs of groups of indistinct areolations on the median area. Antennal tubercles absent. Eyes small, submarginal, of 3 facets. Antennae shorter than the width of head, 5-jointed, with a few rather long setae; the 1st joint nearly as long as the tubercles on the front; the 3rd straight, with many spinules, without sensoria; the 4th narrowed towards the base, with a small circular sensorium; the 5th somewhat imbricated, the distal part small, with some distal setae; the relative length of joints about as follows: I—10, II—11, III—30, IV—11, V—19 + 4. Rostrum very stout, broadly rounded at the tip, not tapering, nearly reaching the middle coxae. Pronotum distinctly defined from the mesonotum; meso- and metanota defined; basal abdominal segments fused together, the 7th abdominal segment faintly discernible on the dorsum, the 8th abdominal segment separated, broadly rounded. Cornicles very short, represented as mere rings, but large, larger in diameter than the marginal wax-plates. Anal plate divided, each part wider than long, rounded, with some very long bristles, of which 2 are stouter. Cauda constricted basally, much wider than long, larger than the lobe of anal plate, with some very long stout bristles. Legs rather large, with some long fine setae; femora with 2 small sensoria near the base; tibiae stouter than the

3rd antennal joint, slightly shorter than the femora; tarsi as long as the 3rd antennal joint, somewhat imbricated, with 2 very long fine apical hairs somewhat capitate. Length of body, about 1·9 or 2·0 mm. Width of body, about 1·45 mm. Length of antenna, about 0·42 mm. Hind tibia, about 0·36 mm.

Food-plant.—*Viscum coloratum*, Loranthaceae, parasitic on other trees.

Corea: Suigen (*K. Saito*), July 1931.

The young larvae possess 4 short blunt tubercles on the front of head, each of which is provided with an eminent apical seta.

Most of the genera of the subtribe Cerataphidina, to which this new Aphid belongs, are found in the Oriental Region and among them the genus *Doraphis*, Mats. & Hori, is the only one restricted to the Palaearctic Region (Japan and Siberia).

Thoracaphis machili, sp. n.

Wingless viviparous ♀. Blackish-brown. Body nearly circular when seen from above, somewhat protruding on the hind end, flattened on the dorsum, chitinised rather strongly. Dorsum with many small very short rounded papillae and mosaic-like on the

Fig. 2.—*Thoracaphis machili*, sp. n.; Wingless viviparous female.

surface, and with 3 indistinct transverse furrows and many prominent bristles as shown in the figure; some fine hairs present on the marginal area. Head and thorax fused together. Eyes very small, of 3 facets. Antennae slender, straight, somewhat exposed, 3-jointed, with a short seta at the tip; the distal part of the last joint distinct, short, slender. Abdomen scarcely defined from the thorax, small; but the 8th abdominal segment well defined, broadly rounded. Cornicles very small. Anal plate divided, each lobe rounded on the margin, with some very long bristles. Cauda short, a little constricted basally, wider than the lobe of anal plate. Legs short, exposed; tibiae with a few short setae; tarsi with 2 very long fine hairs somewhat capitate. Length of body, about 1·0 mm.

Food-plant.—*Machilus* sp., attacking the lower side of leaf along the midrib.

Formosa: Kuraru near Koshun, specimens taken by the author on 25 May, 1932.

This species is closely related to *Thoracaphis cuspidatae*, Essig & Kuw., but differs from it in possessing eminent dorsal bristles, as well as in the smaller body. The winged form is not known.

Thoracaphis tuberculatus, sp. n.

Wingless viviparous ♀. Pale yellow. Body chitinised, irregular in shape, with some very large irregular protuberances on the margin, which are smooth on the surface and are usually absent on the posterior part. Dorsum flattened densely with many small and rather large papillae and mosaic-like, and with many long very stout somewhat curved setae; the papillae pointed apically, but rounded when seen from above, scarcely present between the antennae. Antennae very small, located on the dorsum, of 3 joints; the last joint lacking sensoria evident, the distal part not distinct. Eyes small, much larger

Fig. 3.—*Thoracaphis tuberculatus*, sp. n.; 1. Wingless viviparous female; 2. Dorsal papillae (lateral view); 3. Dorsal papillae (dorsal view).

in diameter than the dorsal papillae, of 3 facets, present on the dorsum. Abdomen scarcely defined from the thorax, small, a little protruding; the 8th segment distinct, very short, broadly rounded on the margin. Cornicles absent. Anal plate bilobed. Cauda rounded, not constricted basally. Legs short, exposed; tibiae shorter than the femora; tarsi very small, not segmented, lacking claws, but with 2 rather long fine capitate hairs. Length of body, about 0·5 mm.

Food-plant.—*Quercus gilva*, attacking the lower side of leaf, especially along the midrib.

Formosa: Taihoku and Sozan, specimens collected by the author in May, 1932.

This species is different from other known species of the genus in the minute body, in the distribution of dorsal setae, and in possessing irregular marginal protuberances. The cauda is not constricted basally and the species is not a typical form of *Thoracaphis* and may be the aleyrodiform female of *Astegopteryx styracicola*, Takah., or *A. styracophila*, Karsch, the migrations of which have not yet been studied.

All the type specimens will be preserved in the collection of the Department of Agriculture, Research Institute, Formosa.

KEYS TO SOME INDIAN GENERA OF CARABIDAE (COL.). II. GENUS *DIORYCHE*

By H. E. Andrewes, F.E.S.

1(10). Intervals of the elytra near apex of approximately the same width.
2 (9). Intervals very finely and somewhat indistinctly punctulate; length about 7 mm.
3 (8). Intervals flat, upper surface cupreous or brassy.
4 (7). Scutellary striole short and oblique, microsculpture of the elytra isodiametric.
5 (6). Femora pale . . . . . *colombensis*, Nietn.*
6 (5). Femora dark . . . . . *colombensis*, Nietn. var. *braccata*, Bates †
7 (4). Scutellary striole fairly long, microsculpture of the elytra formed by meshes about three times as wide as long . . . . . *torta*, Macl.‡
8 (3). Intervals convex, upper surface black with greenish reflections, the meshes of the microsculpture slightly transverse on the elytra, obsolete on the head and prothorax . . . . . *convexa*, Andr.§
9 (2). Intervals distinctly punctate; length 9 mm. . . . . *longula*, Bates ‖
10 (1). Intervals 3 and 5 near apex clearly wider than the adjoining ones.
11(20). Scutellary striole obsolescent or represented by an umbilicate pore only.
12(19). Sides of prothorax not sinuate behind, elytral striae moderately impressed, microsculpture of the elytra formed by meshes at least approximately isodiametric.
13(18). Hind angles of prothorax moderately sharp, though obtuse, elytral intervals at least slightly convex.
14(17). Elytral intervals moderately convex, very narrow and subcostate near apex, scutellary striole, though very short, generally visible, femora dark.
15(16). Dark aeneous, sides of prothorax straight behind, seriate pores on the elytral intervals occupying about a third of the width; average length 7 mm. . . . . *nagpurensis*, Bates ¶
16(15). Dark bronze, surface highly sericeous, sides of prothorax rounded throughout, seriate pores on the elytral intervals occupying about half the width; average length 8 mm. . . . . *sericea*, Andr.**
17(14). Elytral intervals only slightly convex, and, though narrow, hardly more convex near apex, scutellary striole usually formed by an umbilicate pore only, legs pale . . . . . *chinnada*, Andr.††
18(13). Hind angles of prothorax somewhat rounded, elytral intervals quite flat, even near apex, legs pale . . . . . *liparops*, sp. n.
19(12). Sides of prothorax slightly, though evidently sinuate before base, elytral striae very deep throughout, microsculpture of the elytra formed by meshes on average three times wider than long, femora dark. *solida*, sp. n.
20(11). Scutellary striole moderately developed, seriate pores on the elytral intervals very large and conspicuous, microsculpture of the elytra practically isodiametric, legs pale . . . . . *indochinensis*, Bates ‡‡

* 1857, *J. Asiat. Soc. Bengal*, **26** : 151.
† 1891, *Compt. rend. Soc. ent. Belg.*, **35** : 330.
‡ 1825, *Annulosa Javanica* : 21.
§ 1924, *Mission Babault, Carabidae* : 90.
‖ 1892, *Ann. Mus. Civ. Genova*, **32** : 330.
¶ 1891, *Compt. rend. Soc. ent. Belg.*, **35** : 329.
** 1922, *Ann. Mag. Nat. Hist.*, (9), **9** : 289.
†† 1921, *Rec. Ind. Mus.*, **22** : 342.
‡‡ 1889, *Ann. Soc. ent. Fr.*, (6) **9** : 270.

Dioryche liparops, sp. n.

Length, 7·5–8·5 mm. *Width,* 2·9–3·3 mm.

Piceous, moderately shiny, upper surface bronze, base and apex of palpi, joints 1 and 2 of antennae, and legs flavous.

Head large, convex, eyes rather flat, clypeus bordered, emarginate, antennae slender, extending a little beyond base of elytra, surface finely punctate, vaguely on disk, some irregular impressions behind clypeal suture. *Prothorax* convex, subcordate, about a fifth wider than head and a third wider than long, widest just before middle, base as wide as apex, sides bordered, rounded from apex to base, without sinuation, a seta at apical third, hind angles obtuse and somewhat rounded; median line just perceptible, basal foveae rounded and rather shallow, surface finely and not very closely punctate, more closely in the foveae. *Elytra* ovate, moderately convex, a fourth wider than prothorax, a half longer than wide, widest at about apical third, basal and side borders meeting at an angle, but without forming any tooth, a moderate sinuation on each side near apex; striae rather fine, but moderately deep, impunctate, scutellary striole very short, hardly more than an elongate, umbilicate pore, intervals flat, 3 and 5 wider than the adjacent intervals near apex, 3, 5, and 7 seriate-punctate, the punctures small but quite distinct, 5 depressed near apex, marginal series widely interrupted, surface very finely punctulate. Microsculpture of the head and elytra isodiametric; on the prothorax the meshes are on average a little wider than long. Prosternal process, metasternum, and middle of venter minutely punctulate and with traces of pubescence; metasternal process bordered; metepisterna a little longer than wide; apical ventral segment (♂♀) with two marginal setae on each side; ♂ protarsi with four slightly dilated joints.

Burma: Minhla (*D. Comotto*)—Genoa Civic Museum, 3 ex.; Yenangyaung, Magwe (*J. Coggin Brown*)—Indian Museum, 1 ex. The type is in the Genoa Museum.

Dioryche solida, sp. n.

Length, 8–9 mm. *Width,* 3–3·5 mm.

Black, moderately shiny, upper surface dark bronze, palpi, joints 1 and 2 of antennae, and tibiae dark ferruginous.

Head large, convex, eyes not prominent, clypeus bordered, slightly emarginate, antennae slender, barely reaching base of elytra, surface with a few minute punctures on front and at sides. *Prothorax* convex, a fourth wider than head and as much wider than long, widest just before middle, base a little wider than apex, its sides slightly oblique, sides finely bordered, gently rounded in front and faintly sinuate behind, a seta at apical fourth, hind angles slightly obtuse and moderately sharp; median line very faint, basal foveae small but fairly deep, surface with some fine, vague, scattered punctures, the base more closely punctate, especially the foveae, which contain some larger punctures. *Elytra* oval, convex, a third wider than prothorax, two-thirds longer than wide, the basal and side borders meeting in a small sharp angle at shoulder, a fairly deep sinuation on each side near apex; striae fairly deep, impunctate, scutellary striole reduced to an elongate, umbilicate pore, intervals flat, 3 and 5 evidently wider than the adjacent intervals near apex, 3, 5, and 7 seriate-punctate, the punctures small and not very numerous, marginal series widely interrupted, surface very finely and indistinctly punctate. Microsculpture of the elytra and prothorax formed by meshes on average three times as wide as long; on the head the meshes are isodiametric. Prosternal process, metasternum, and middle of venter slightly and finely pubescent; metasternal process bordered; metepisterna bordered, a half longer than wide; last ventral segment with two lateral setae on each side in both sexes; ♂ protarsi with four slightly dilated joints.

Bombay: North Kanara (*T. R. D. Bell*), numerous examples. The type is in my collection.

SOME AFRICAN BEES OF THE GENUS *CROCISA* IN THE BRITISH MUSEUM

By Prof. T. D. A. Cockerell, F.E.S., and Alice Mackie.

The parasitic bees of the genus *Crocisa* are widely spread over the warmer regions of the Eastern Hemisphere, extending even to Australia. Dr. Reinhold Meyer, in his excellent revision published in *Archiv für Naturgeschichte*, 1921, recognised 117 species. He omitted, however, 16 species which were published in 1919, and a few have been published more recently. The exact number of valid species represented by the published names is somewhat uncertain. Vachal in 1903 published many new African species, of which ten are accepted as valid by Meyer. The definitions of these were very brief, and the tendency has been to refer to them specimens having the characters assigned, without considering various other characters not mentioned. Certain species, as *C. picta*, Smith, have an extraordinarily wide distribution. Others, accepted by authors as single species, appear on closer examination, with good series, to break up into separable forms or subspecies, characteristic of particular areas. The correct elucidation of these various forms is often difficult, owing partly to the lack of sufficient material, partly to individual variability, and partly to the fact that the pubescent markings can be rubbed off, giving quite a false appearance to a specimen. To illustrate one class of difficulties we may take the desert species *C. hyalinata*, Vachal. It is described as having the mesothorax anteriorly covered with white hair. This is true of the males, but the females usually have the discal spots and median band distinct, though they may be marked like the males. Both kinds of female were found in the same locality; had they been found far apart it would have appeared reasonable to treat them as distinct subspecies. But even though they fly together, it is not impossible that they are in fact separate, parasitic on different species of *Anthophora*. *Crocisa bouyssoui*, Vachal, varies, in different parts of its wide range, so that selected specimens from different regions look like different species or subspecies. But the characters involved are so variable that it seems impracticable to subdivide the series. On the other hand, the related *C. interrupta*, Vachal, is so constantly different in the eastern and western parts of its range, that we have no hesitation in recognising two subspecies, *interrupta* proper, and *interrupta ugandensis*. A few references to specimens from the Congo Museum, Tervueren, have been included. One of these (*C. gabrielis*) represents a new species, and the type belongs to the Congo Museum. All the other types are in the British Museum.

Crocisa quinquefasciata, Smith.

Madagascar: Tananarive (*Ch. Lamberton*). Congo Museum.

Crocisa candida, Cockerell.

On examining cotypical material of *C. valvata*, Brauns, 1909, it seems that this is a synonym of the species described by Brauns, in which the axillae may be wholly unspotted (typical *valvata*) or with a well-defined spot (*candida*). The latter form comes from Natal and the Transvaal (Sterkfontein, *Thomasset*).

Crocisa valvata, Brauns.

Cape Province: Lady Grey, 1926 (*R. I. Nel*). Meyer says *C. valvata* is *C. vachali*. Friese, according to the specimens in Berlin Museum. But the description seems to indicate otherwise, and the Berlin Museum has no material from near the type locality of *C. vachali*.

Crocisa scotaspis, Vachal.

Belgian Congo: between Mombassa and Irumu, Oct. 14, 1931 (*Mdme. L. Lebrun*). Congo Museum.

Nyasaland: Mlanje (*J. B. Davey*).

Also from Nairobi (*Van Someren*) and Entebbe (*C. C. Gowdey*).

Crocisa picta, Smith.

Nyasaland: Mlanje (*Neave*); Blantyre (*J. B. Davey*).

Natal (*J. F. Queckett*). Also from Crowley bequest. Type is from Port Natal.

Uganda: S. of L. George, 3200–3400 ft., Oct. 1911 (*Neave*); N.W. shores of Victoria Nyanza, 3800–3900 ft. (*Neave*); Entebbe (*C. C. Gowdey*).

Liberia: Memeh Town, 1926 (*J. Bequaert*).

Belgian Congo: Elisabethville (*M. Bequaert*); Eala (*H. J. Brédo*).

Transvaal: Louis Trichardt, April (*J. Ogilvie*).

The wide distribution of this handsome species is remarkable.

Crocisa maculiscutis, Cameron.

S. Rhodesia: Lonely Mine (*Swale*); Umgusan (Rhodesia Museum); Hope Fountain (Rhodesia Museum).

N.E. Rhodesia: Mid Luangwa Valley (*Neave*).

Transvaal: Sterkfontein (*Thomasset*).

These were placed under *C. histrio* in the British Museum. The latter is an Asiatic species with entirely dark axillae, and the scutellum quite differently shaped.

Crocisa luangvensis, Cockerell & Mackie, sp. n.

♀. Length about 10 mm., anterior wing 9 mm.; black, robust, with pale markings of felt-like hair, white on head, thorax and legs, but distinctly pale blue on abdomen, except at sides of tergites; eyes greyish-brown; face, sides of front, and cheeks covered with white hair, occipital fringe entirely white; prothorax with the usual two transverse spots, sharply defined and well separated, the contiguous mesothoracic spots broad, ending abruptly mesad some distance before the prothoracic ones, but laterally continuous with the lateral bands; median longitudinal band well developed, extending more or less beyond middle of mesothorax; discal spots round, sharply defined, about equally distant from median and lateral bands; lateral bands narrowed in middle; posterior mesothoracic spots triangular, large, well separated from lateral bands; axillae without light hair; scutellum with broadly arched somewhat ~~ like margin, beneath which is a fringe of white hairs; three sharply defined white hair-spots on scutellum, the median one, above the incision, elongate or nearly circular, the others, placed at the sides of the disc not far from the margin, circular; first tergite with U-shaped markings, the arms about equally long, or the upper (the basal band) somewhat longer, with the median interruption small; the other abdominal markings as usual, the anterolateral extensions of marks on second tergite angular; upper part of sides of thorax covered with rough hair, a short black band indicating the division between upper and lower parts of the white area; at the sides of the sternal region

are thin patches of hair; abdominal venter with conspicuous lateral hair patches on sternites 2 and 3; fifth sternite with a short keel at end; anterior wings dilute brownish, not dark, the first discoidal and first cubital cells practically hyaline; legs black; middle femora apically behind with a thick V-shaped mark of white hair; anterior and middle tibiae densely white haired on outer side, hind tibiae with only about the basal half white, the division very oblique; tarsi with much white hair. The abdomen has slight metallic (green and purplish) tints.

N.E. Rhodesia: Upper Luangwa River (type locality), July 27–Aug. 13, 1910 (*S. A. Neave*); Lower Luangwa River, Sept. 4–13, 1910, 1600–1800 ft. (*S. A. Neave*).

Abyssinia: Das, Oct. 21, 1911 (*R. J. Stordy*). There are four specimens from the type locality.

By reason of the three scutellar spots this falls with *C. tschoffeni*, Vachal, which, however, as we have identified it, has the spots in more or less of a transverse band ("in ordine transverso," Vachal). This *C. tschoffeni* also comes from the Upper Luangwa River, N.E. Rhodesia (*Neave*), and has large bluish spots on the axillae, next to the scutellum, which apparently *C. tschoffeni* should not have. Furthermore, all these Rhodesian insects have the abdominal markings light blue, whereas Vachal describes them as white. The original *C. tschoffeni* came from Boma, on the Lower Congo. It thus appears uncertain whether we really have Vachal's species before us, but in any event, *C. luangvensis* appears distinct.

In Friese's table reference is made to a three-spotted scutellum, meaning one with a single spot above the incision, and spots on the axillae. This, of course, is not three-spotted in our sense.

Crocisa gabrielis, Cockerell & Mackie, sp. n.

♀. Length about 10·5 mm., anterior wing 10 mm.; robust, black, with very bright blue markings of felt-like hair; face, sides of front, and cheeks covered with blue hair; eyes pale greyish-brown; occipital fringe black in the middle; prothoracic spots white, but the slender contiguous mesothoracic ones blue, the latter not nearly reaching the lateral bands, which begin only at the anterior end of the tegulae; median band parallel-sided, extending as far as hind end of discal spots, which are oval, and nearer to lateral than to median band; lateral bands united with the large posterior spots, which are not distinctly angular in front; axillae with a distinct spot of blue hair, not covering the surface; scutellum large, wholly immaculate, the margin ⌒ like, with a very wide arch, the double curve very strong; white hair projecting beneath the incision in the middle; a spot of white hair behind base of wing; upper part of sides of thorax with pale blue hair shading into white, the two parts of the patch separated by a black band; a patch of blue hair on each side of thorax beneath; large quadrate marks on sides of first tergite joined by a broad band anteriorly, so that the blue is broadly and squarely incised, the corners of the black area extending somewhat laterad; the broad marks at sides of second tergite, separated by a space less than their length, have no laterobasal extensions, but anteriorly (cephalad) toward the inner end is a distinct obtuse angulation; venter not spotted; fifth sternite obtusely ridged, the ridge shining apically; legs slightly reddish; hind coxae with small blue spots; blue hair nearly covering outer side of anterior and middle tibiae, but hind tibiae with little more than the basal half blue; tarsi dark haired, except a very little blue on anterior and middle basitarsi; middle femora with a blue patch at apex posteriorly; wings very dark fuliginous, the hyaline spots obscure.

Belgian Congo: Mission St. Gabriel (*R. P. Kohl*; don. M. Torley). Congo Museum.

This has an extraordinary resemblance to *C. splendidula*, Lep., which has no white hair below the scutellar incision. The blue of the two species is quite different. The colour of *C. splendidula* is bright turquoise, that of *C. gabrielis* a pure, duller blue, without any greenish tinge. *C. splendidula* is distinctly larger and more robust. In *C. splendidula* the posterior spots of mesothorax are usually, but not always, separated from the lateral bands: in *C. gabrielis* they are broadly united. According to Meyer's arrangement, this falls in a different group from *C. splendidula*, but it is surely closely allied.

Crocisa interrupta, Vachal.

Gold Coast, 1913 (*A. E. Evans*), both sexes; Obuasi, Ashanti (*Dr. W. M. Graham*), ♂; Ashanti (*A. E. Evans*) ♀. Accra must be considered the type locality. In the typical form the large blue spots on the first tergite are widely separated, so that they reach only as far as the points of the scutellum. The axillae in this species are entirely without blue hair.

Crocisa interrupta ugandensis, Cockerell, subsp. n.

The blue spots on the first tergite are much closer together, extending considerably beyond the points of the scutellum. In the male the apical spines of the abdomen are somewhat closer and longer. The type is a male from Maoira Forest, Uganda, July 3, 1913 (*C. C. Gowdey*). Other specimens from Uganda are: Semliki Plains, near S. shore of L. Albert, 2200 ft. (*Neave*); Bodeo, W. shores of Victoria Nyanza, 3700 ft. (*Neave*); Budongo Forest, Unyoro, 3400 ft. (*Neave*); Tero Forest, S.E. Buddu, 3800 ft. (*Neave*); Entebbe, 1912 (*C. C. Gowdey*); Mabira Forest, Chagwe, 3500–3800 ft. (*Neave*); S. of L. George, 3200–3400 ft. (*Neave*).

There are also two specimens from the Belgian Congo, from the Salt Collection; Lisala, 21° 30′ E., 2° 10′ N., Oct. 1924; Lele River, 23° to 30° E., 3° 30′ N. I have reason to suppose that the first was collected by Maurice Bequaert, the second by Rodhain. The characters of this race are slight, but perfectly constant.

The race *ugandensis* was also collected by Mdme. L. Lebrun between Mombassa and Irumu, Belgian Congo, Oct. 14, 1931 (Congo Museum).

Crocisa splendidula, Lepeletier (*fasciata*, Friese).

The scutellum is entirely without spots: the axillae are spotted, but the spots may be extremely small, almost wanting. The first tergite has a broad basal blue band, with an extension at each side, so that the blue area is widely and deeply emarginate posteriorly.

Uganda: Mpanga Forest, Toro, 4800 ft. (*Neave*); Budongo Forest, Unyoro, 3400 ft. (*Neave*); Buamba Forest, Semliki Valley, 2300–2800 ft. (*Neave*); Bugoma Forest, Unyoro, 3700 ft. (*Neave*).

Crocisa bouyssoui, Vachal.

The scutellum has a median spot, which may be quite large, or very small, or is frequently altogether absent. The axillae always are blue-haired, and the apex of the male abdomen is briefly tridentate. I find it impossible to separate two races on the spotted or not spotted scutellum. A male from Dilolo, Belgian Congo, July (*J. Ogilvie*), has a large spot; a female from the same place (*W. P. Cockerell*) is practically unspotted, though there are a few blue hairs.

However, specimens from the Gold Coast (*A. E. Evans*) and Ashanti (Ojesu, *A. E. Evans*) have the scutellum quite unspotted, or at most with minute traces of a spot, while those from Uganda nearly always have a very distinct spot. A female from Mabira Forest, Uganda (*Gowdey*), shows only a single blue hair where the spot should be. The typical form has the scutellum without spots.

In Uganda this also occurs as follows: Mabira Forest, Chagwe (*Neave*); Semliki Plains, near S. shore of L. Albert (*Neave*); Bugoma Forest, Unyoro (*Neave*). A female with unspotted scutellum is from Eala, Belgian Congo, 1931 (*H. J. Brédo*; Congo Museum). Specimens with spotted scutellum were taken by Mdme. L. Lebrun between Mombassa and Irumu, Belgian Congo (Congo Museum).

Crocisa nubica, Lepeletier.

The scutellum is wholly without spots, the margin W-like; the end of the male abdomen is broadly truncate, not at all dentate.

N. Nigeria: Azare, 1926 (*Dr. Ll. Lloyd*). Sudan: Menzi River, March 22, 1911 (*H. H. King*); Khartoum, March 10, 1924 (*H. H. King*); Gendettu, in cotton fields, Oct. 23, 1923 (*W. E. Giffard*).

I have before me three other species of this immediate alliance (though differing in the shape of scutellum); the four may be separated thus:—

A spot of black hair behind tops of eyes, broadly interrupting the white; middle of front broadly black-haired, sides pure white, abruptly contrasting; no median stripe on mesothorax; margin of scutellum W-like *neavei*, sp. n.

No distinct spot of black hair behind tops of eyes . . . . . 1.

1. Scutellum with margin W-like, the incision forming an angle little greater than a right angle; posterior spots of mesothorax gradually passing into lateral bands, with a gentle curve . . . . . *nubica*, Lep.

Scutellum with a much wider angle in incision; posterior spots of mesothorax with lateral bands resembling a picture of a clay pipe . . . . . 2.

2. Larger; median stripe of mesothorax wholly absent . . . *debonia*, sp. n.

Smaller; median stripe well developed . . . . . *gambiensis*, sp. n.

Crocisa neavei, Cockerell, sp. n.

♀. Length 11·2 mm., anterior wing 10·8 mm.; black, robust, with pure white felt-like markings; head broad; eyes very dark; sides of face and front broadly covered with dense white hair, but a band in middle of front, broader than either white one, black-haired and abruptly contrasting; this broad black band continues upward over occiput and to the end of mesothorax, which is wholly without the median stripe; sides of occiput with a large tuft of white hair, then a black tuft, and beyond that white hair covering the cheeks; tubercles black-haired; prothorax with two large patches of white hair, united with transverse bands, angular posteriorly toward inner end, on mesothorax; white discal spots rounded, sharply defined, their distance from the lateral bands equal to about half their diameter; lateral bands beginning at about level of anterior edge of spots, rather broad, bending and thickened posteriorly, where broadly confluent with the posterior mesothoracic spots; sides of thorax with a large transverse white patch, above and below which the hair is black; underside of thorax black, but a small tuft of white hair on outer side of each hind coxa; scutellum short and broad, glistening, entirely immaculate, the hind margin W-like, the subapical curve very strong; white tuft from below scutellum very dense, large and broad; axillae all black; tegulae black; anterior wings dark reddish fuliginous, with diffused hyaline spots just beyond the cells; legs black; anterior tibiae with dense white hair on outer side except at apex, middle and hind tibiae with about the

basal half white: all the tarsi black-haired: hind femora unarmed: abdomen very broad, with strong metallic tints: band on first tergite reduced to lateral pyriform spots, not extended mesad: tergites 2 to 5 with lateral transverse spots: venter not spotted: fifth sternite keeled on more than apical half.

British E. Africa: Mrito Andei, 2500 ft., March 26–28, 1911 (*S. A. Neave*).

Crocisa delagoana, Cockerell, sp. n.

♀. Length 11 mm., anterior wing 8·8 mm.: black, robust, with pure white felt-like markings: eyes light grey: head smaller and face narrower than in *C. neavei*: middle of front black, the band extending as in *C. neavei* to hind end of mesothorax, the median stripe being wholly absent: white fringe at sides of occiput continuous without a break with white of cheeks, or a few black hairs behind top of eyes: anterior marks on prothorax and mesothorax as in *C. neavei*, but rather smaller: other thoracic marks as in *C. neavei*, but spots more distant from lateral bands: incision of scutellum forming a very wide (open) angle, but the borders on each side straight, not strongly flexuose as in *C. neavei*: wings as in *C. neavei* but the hyaline spots indistinct: sides of thorax with a large white patch under wings, broadly connected anteriorly with the main patch: this upper patch is wholly wanting in *C. neavei*: legs as in *C. neavei* except that the femora are reddish: there is a tuft of white hair on outer side of hind coxae as in *C. neavei*: abdomen as in *C. neavei*, with no spots on venter, but the white patches on sides of first tergite deeply concave mesad, and the band on second tergite presenting an angular extension latero-basally. It is possible to imagine that there are ventral spots, owing to the way the light is reflected at a certain angle.

Two from Delagoa Bay (British Museum, 83, 27).

Crocisa gambiensis, Cockerell & Mackie, sp. n.

♀. Length about 7·5 mm., anterior wing 7·5 mm.: black, robust, with pure white felt-like markings: eyes light grey, orbits converging below: a very strong keel between antennae: face and sides of front with dense white hair: region in front and at sides of ocelli bare and shining: white occipital fringe complete, and continuous with white of cheeks: flagellum dark reddish beneath: spots on upper part of prothorax, with adjacent mesothoracic extensions, long, transverse, not widely separated: the mesothoracic part is narrowly connected with the lateral bands, which are posteriorly confluent with the posterior spots: median band well developed, lanceolate: disal spots round, sharply defined, their distance from lateral bands equal to more than half their diameter: upper half of sides of thorax (the lower boundary straight and sharp) densely white-haired, the upper and lower patches of *C. delagoana* completely confluent: scutellum like that of *C. delagoana*: femora rufescent: legs marked as in *C. neavei*, but the white covering more than half of hind tibiae: tarsi all black: wings fuliginous with suffused hyaline spots at end of third cubital cell and just beyond: abdomen as in *C. delagoana*, except that the incipient bands or extensions from lateral spots of first tergite are larger; as in *C. delagoana* there is an anterior lobe on lateral marks of second tergite, this being wholly lacking in *C. neavei*: hind coxae with a tuft of white hair: hind femora unarmed: venter without spots.

Gambia, April 1, 1911 (*J. J. Simpson*), Brit. Museum, 1911–250. N. Nigeria: Zungeru, Nov. 14, 1911 (*Dr. J. W. Scott Macfie*). *C. calonia*, Brauns (♀ from Howick, Natal) is easily distinguished by the triangular posterior mesothoracic spots, hair-spot above scutellar incision, white hair on hind tibiae more extensive, and the three marks on disc of mesothorax greyish and ill-defined.

Crocisa fenestriculipennis, Strand.

♂. Length about 14 mm., anterior wing 12·5 mm.; black, with pure white markings, the hair on thorax mostly long and loose; eyes brown; orbits moderately converging below; face, front, cheeks and occiput with long white hair, the occipital fringe long and complete; prothoracic band narrowly broken; markings of mesothorax anteriorly consisting of long hair, posteriorly more felt-like; median band extending from front to middle of disc, broad, diffuse, of very long hair, little separated from discal spots which are large and consist of long hair, and are narrowly separated from the broad diffuse lateral bands; the latter are broadly connected with the subtriangular posterior spots; axillae covered with white hair; scutellum wholly immaculate, shining, the apical lobes long and sharp, the margin showing a slight double curvature, so that the form is intermediate between the W type and the -- type; copious white hair from beneath the incision; a small spot of white hair at base of wing, and another at posterior end of tegula; upper half of sides of thorax white-haired; wings rather dilute reddish fuliginous, not very dark, the hyaline spots large, diffuse, confluent; legs black, with anterior tibiae, middle tibiae except apical part, and about basal half of hind tibiae, densely covered with white hair; middle and hind tarsi black-haired, but anterior basitarsi with a line of white; abdominal marks felt-like, but the hairs long; first tergite with a large diamond-shaped bare area, the basal band almost or quite entire, the apical one rather widely interrupted; marks on second tergite with a distinct angular extension laterobasally; apex of abdomen rapidly tapering, briefly and narrowly bidentate; venter immaculate. One from Entebbe shows a very few pale hairs on scutellum in middle and at extreme sides.

♀. Similar to the male; discal spots of thorax smaller and more isolated; fifth ventral segment with a shining apical keel; hind femora unarmed.

Uganda: Entebbe, May 6–25, 1912, 4 ♂, 2 ♀ (*C. C. Gowdey*). Also from British E. Africa: Nasisi Hills, 20 m. N. of Mumias, 4800 ft., June 14–15, 1911, 1 ♂ (*S. A. Neave*).

A female considered to be *C. excisa*, Friese, from Sterkfontein, Transvaal (*H. P. Thomasset*) is extremely close to the above, though the scutellum is considerably broader, and the wings are conspicuously darker. Friese based *C. excisa* on females from Accra and Old Calabar, and males from Shilouvane, Transvaal. These were probably not the same, and Accra must be considered the type locality. Friese says of *C. excisa* that the markings are white or bluish white, but the bluish appearance is probably illusory, due to the scale-like hair being in part thin enough to show the black surface through. His figure of the end of the male abdomen agrees with our insect. Strand briefly indicated the characters of a female from S.W. of Lake Albert, Kirk Falls. This was doubtfully referred to *C. excisa* by Friese, but Strand suggested that it might prove distinct, in which case it could be called *C. fenestriculipennis*. The small apical keel on fifth sternite, absence of black tufts on apical sternites, and the locality, all suggest that we have the insect described by Strand, which is at any rate subspecifically distinct from the Transvaal *C. excisa*. But the true *C. excisa*, from W. Africa, known only in the female, remains problematical. It is not impossible that the same species should extend from Accra to the Transvaal, even without subspecific modification, as *C. picta* has such a range.

Crocisa fortissima, Cockerell & Mackie, sp. n.

♀. Length 17 mm., anterior wing 13 mm.; robust, black, with white markings, mainly felt-like, but some of the hair, as on sides of thorax, long and loose; eyes light greyish-brown; face and sides of front covered with white hair, long on front; third antennal

joint distinctly longer than fourth; prothoracic band widely interrupted, and not joining lateral bands; median band beginning close to anterior margin of mesothorax and extending to level of posterior ends of discal spots, which are equidistant from median and lateral bands; posterior spots of mesothorax large, separated from lateral bands; axillae covered with white hair; scutellum large, the notch forming a wide angle, the sides of the incision distinctly convex; two hair-spots on scutellum, not touching margin, about twice as far from centre as from edge at side, and very close to posterior margin; hair below notch thick and long; sides of thorax with the usual large patch of white hair, with a bare black line on upper part, stretching about half-way across; the upper part of the patch joins the lateral bands on thorax making a complete **C** around base of wing in front; tegulae black, with the usual spots; wings rather dilute reddish fuliginous, the hyaline spots suffused and indistinct; tibiae and tarsi covered externally with white hair, femora with only scanty long white hairs beneath; first tergite with white markings at each side, resembling pot-hooks or a thick **V**, with a very wide interval between them, the anterior portions somewhat more distant than the lower, owing to the oblique position of the **V**; transverse bands on the other tergites interrupted by spaces about equal to the length of the portion on either side; marks on second tergite having the usual anterior extension, on which are numerous long outstanding white hairs; caudal plate large, with a distinct median keel, extending nearly to the base; thin patches of white hair on sternites 2 to 4.

Abyssinia (*Stordy*). Three females, placed in the British Museum as *C. abyssinica*, Rad., which is an entirely different insect, with bluish markings. (True *C. abyssinica*, Rad., exactly agreeing with the description, comes from Shendi, Sudan, in garden, July 7, 1923, collected by W. E. Giffard.) *C. fortissima*, a very fine robust species, stands near to *C. histrio*, Fab., but that Asiatic species has no spots on the scutellum.

Crocisa nyasana, Cockerell, sp. n.

♀. Length about 14 mm., anterior wing about 12·5 mm.; black, with slight metallic tints on abdomen, robust, the pubescent markings white without any trace of blue; labrum long, with a median groove; sides of face and front with dense pure white hair; clypeus with short silvery hair, not dense enough to hide the surface; ocelli large; white occipital fringe long and complete; third antennal joint much longer than fourth; white prothoracic band reduced to two transverse marks, little longer than the space between them; median band of mesothorax broad, strictly parallel-sided; discal spots round, about equally distant from median and lateral bands, the distance somewhat less than their diameter; anterior bands (contiguous with prothoracic ones) rather thin, not reaching lateral bands; lateral bands joining the large triangular posterior ones; axillae wholly dark; scutellum broad, with ⌒ like margin, and with a pair of large subquadrate spots, next to the outer margins; upper wings dark fuliginous, a hyaline spot just beyond junction of outer cubital and discoidal cells; hind-wings broadly dusky apically; upper half of sides of thorax covered with pure white hair; a row of small patches of white hair on each side of sternal region; anterior tibiae covered with white hair on outer side; middle tibiae with basal two-thirds white; hind tibiae with a little more than half white; basitarsi with white hair on outer side; middle femora with a white hair-spot on posterior face; hind femora unarmed; first tergite with basal band almost or quite entire, the apical one interrupted by a distance much less than that between the points of the scutellum; band on second tergite with a large laterobasal extension, obtusely conical in outline; venter immaculate; apical dorsal plate small, narrow, concave, wholly without keel; sting sheath produced far beyond dorsal plate, with stiff black hairs at sides of apex; fifth sternite wholly without a keel.

Nyasaland, Mlanje, Dec. 23, 1912 (*S. A. Neave*). British Museum. In Meyer's table it runs nearest to *C. abyssinica*, Rad., which it superficially resembles, differing by the pure white markings, less densely hairy clypeus, and lateral marks on first tergite U-like instead of V-like.

Crocisa braunsiana, Friese.

This species was discovered by Brauns at Willowmore, in the dry part of the Cape Province. A male from Uvira, at the north end of Lake Tanganyika, Aug. 28–29, 1931 (*Lizzie Ogilvie*), compared with a cotype from Willowmore, differs by the hair spots on venter much less developed, and the median band on mesothorax narrower, and mesothorax with much less white hair anteriorly. But the wings, large spots on scutellum, two little black triangles at front of mesothorax, triangular posterior marks of mesothorax and spot on middle femur are all as in *C. braunsiana*, and the specimen must be referred to that species.

From N.E. Rhodesia (*S. A. Neave*), Upper Luangwa River, Mid Luangwa Valley, and Niamadzi River near Nawalia, come numerous specimens which can only be referred to *C. braunsiana*. From Boma, on the lower Congo, comes the closely related *C. chapini*, Cockerell, 1932, with narrower bands. This is probably best called *C. braunsiana chapini*. On the other side of Africa, at Beira, is a different subspecies, to be described as follows :—

Crocisa braunsiana polysticta, Cockerell & Mackie, subsp. n.

♀. Length 10 mm., anterior wing 8·6 mm.; black, with pure white felt-like markings; eyes brown; face and front covered with white hair; white occipital fringe complete; prothoracic band broad and dense, narrowly interrupted; median band of mesothorax broad, sharply defined, narrowing posteriorly, not reaching anterior margin; discal spots round, separated from central band by a distance somewhat greater than their diameter, and from lateral bands by rather less than their diameter; posterior spots large, roughly triangular, pointed anteriorly, not joining the narrow lateral bands; axillae with large white spots on the posterior part, next to scutellum; scutellum with a pair of transversely oblong spots, not very large, placed on the disc, away from the margins; no central spot, but white hair from beneath incision; incision of scutellum forming a very wide angle, but the margins straight or almost so; two white spots at base of wing, and white spots on each tegula, in front and behind; upper half of sides of thorax densely white-haired, with a bare mark between the upper and lower divisions; legs shining, black, hind femora unarmed, anterior tibiae with white hair on outer side; middle tibiae with dense white hair, failing apically, and with black dots on the white; hind tibiae with rather over basal half white, the boundary of the white very oblique; middle femora behind with white hair on apical part below, and above this an elongated conspicuous white spot; all basitarsi with an elongated patch of white hair, on which are black dots; lateral marks on first tergite U-like, far apart, the two arms about equal; marks on second tergite with large rounded extensions anterolaterally; rather thin white hair-spots on sternites 2 to 4; fifth sternite dull, not at all produced, with a very brief keel at end; caudal plate very narrow, not keeled. The wings are much darker than in true *C. braunsiana*.

Portuguese E. Africa, Beira, 3 ♀, June 4, 1932 (*A. Mackie*). Type in British Museum.

C. braunsiana has the posterior band on first tergite nearly entire or at least much more narrowly interrupted than that on second, whereas in the Beira insect the band on first tergite is about as widely interrupted as that on second.

In *C. alfkeni*, Brauns, the middle femora are broadly white-haired apically behind, without any separate spot, and the position of the spots on scutellum is quite different.

Crocisa hyalinata, Vachal.

Sudan: Port Sudan, June 26, 1932 (*J. Ogilvie*); Menzi R. (*H. H. King*); Bauga, along river bank (*W. E. Giffard*); G. R. F. Medani, at flowers (*H. B. Johnston*); Erkowit (*H. H. King*).

Females from Menzi R. and Bauga have the discal spots and median band of mesothorax sharply defined on a black background, but another from Menzi R. has anterior half of mesothorax covered with white hair as in the male. The keel at end of fifth sternite of female, mentioned by Meyer, is not apparent. This is a typical desert species.

Crocisa delumbata, Vachal.

A male from Eala, Belgian Congo (*H. J. Brédo*), received from the Congo Museum, agrees exactly with the description. The markings are a fine blue. This species also comes from Uganda; Entebbe, Jan. 8, 1909 (*C. C. Gowdey*), and N.W. Rhodesia, Chilanga, 4000 ft., 1913 (*F. V. Bruce Miller*).

A NEW PARASITIC BEE FROM NEW GUINEA

By Prof. T. D. A. Cockerell, F.E.S.

Nomada papuana, sp. n.

♂. Length about 5·7 mm.; slender, head and thorax black, rugosely punctured; face with thin glistening hair; middle of mesopleura with a large patch of dense shining white hair; sides of mesothorax posteriorly with large tufts of white hair; head large, wider than thorax; lower half of clypeus (with a small median extension upward), triangular lateral face-marks (ending acutely above on orbits at about level of top of clypeus), labrum and mandibles cream-colour; mandibles stout, simple, dark at tip; scape very long, ferruginous in front; flagellum long, robust, dark brown above, clear ferruginous beneath; third antennal joint very short, cup-like; tubercles yellowish-ferruginous, but no other light marks on thorax; scutellum prominent, presenting two shining discs; area of metathorax with a thick shining border, below which is a black area resembling a very wide thick V; tegulae clear red; wings hyaline, dusky apically; basal nervure going basad of nervulus; second cubital cell receiving first recurrent nervure a little beyond the middle; legs bright ferruginous, the hind coxae black, and the hind tibiae and tarsi with dusky stains; abdomen fusiform, slender at base; first tergite black, with a very broad red apical margin; second and third tergites red with a dusky band at extreme base, that on second weak; fourth with a broad dark band, not reaching extreme sides, and the apical part of the tergite pallid, almost yellowish; beyond this the abdomen is black or nearly so; apical plate broad, strongly notched; venter clear red, dark at extreme base.

"Niew-Guinea Expeditie, 1903. Manolewari, May 2." One specimen, from P. Cameron's collection, in British Museum.

Related to the Australian *N. australensis*, Perkins, but that has the abdomen quite differently marked, the scutellum red, the stigma darker, the sides of the thorax largely red, etc. The genus is new to New Guinea.

NEW INDO-AUSTRALIAN LYMANTRIIDAE (LEP.)

By C. L. Collenette, F.E.S.

The Lymantriids described in this paper were included in a collection sent to me for identification from the Natural History Museum, Vienna, to which the types have been returned. Photographs of the types have been incorporated in the British Museum collection, to which two paratypes have also kindly been presented.

Scarpona trasiana, sp. n.

♂. Palpus upturned, Mikado orange. Antennal shaft cream buff, pectinations sayal brown. Head Mikado orange, between eye and thorax cream buff. Thorax cream buff. Abdomen cartridge buff, dorsally ochraceous tawny, the latter colour extending for a short distance on to the thorax. Pectus and venter cartridge buff. Legs ochraceous tawny mixed with cartridge buff. Fore-wing cream buff, mixed over the whole wing with ochraceous tawny, the cream buff predominating medially and above the cell; a slightly darker patch on the discocellulars caused by an increase in the ochraceous tawny; fringe ochraceous tawny, lighter towards the tornus, the ochraceous tawny slightly invading the wing between the apex and vein Cu_1. Hind-wing cream buff, fringe slightly darker. Underside of both wings cream buff mixed sparsely with ochraceous tawny; fringe of fore-wing and terminal area as on upperside, with an admixture of Saccardo's umber on the fringe from apex to vein M_3; fringe of hind-wing cream buff mixed with ochraceous tawny.

Expanse: ♂, 37 mm.

1 ♂ (holotype), Pahang: Tras, 1912 (*Popp*).

Nearest to *S. lerwa*, Swinh.

A second ♂ from Tras, Pahang (Mitterberg, 1913), kindly presented to the British Museum, can be referred to this species, but is darker than the type, with a straight antemedial fascia on the fore-wing running at right angles to the inner margin, and with the termen excised below the apex and sharply angled outwards at vein M_3 as in *S. discolor*, Hmpsn. (1896).

Dasychira venusta, sp. n.

♂. Palpus cream buff, on the outer side and at the tip fuscous. Antennal shaft cream buff, pectinations tawny olive. Head, thorax and abdomen cream buff, mixed on head and patagium with ochraceous buff. Pectus and venter cream buff, the latter with a series of fuscous spots laterally. Legs cream buff, fore and middle leg with a fuscous spot on the outer side of the tibia at its middle, spurs of hind leg tipped with fuscous, tarsi of all legs fuscous dorsally. Fore-wing cream buff; five equidistant fuscous subbasal spots arranged as in *D. lineata*, Wlkr.; an antemedial series of spots following the same course as the fascia in *D. lineata*, those above the cell fuscous and two in number, those in and below the cell tawny olive and less conspicuous; a broad streak of tawny olive along each side of the discocellulars, broken at the veins; a broad and diffused tawny olive postmedial fascia, broken at the veins, somewhat broader towards the inner margin; a somewhat indistinct tawny olive subterminal fascia, broken at the veins, formed as in *D. lineata*, but the markings broader; a series of tawny olive preterminal interneural spots; fringe cream buff. Hind-wing and fringe cream buff; a series of tawny olive preterminal interneural spots, not reaching the anal angle; inner marginal area tinged with ochraceous buff. Underside of both wings cream buff; an indistinct patch of tawny olive on the discocellulars; an indistinct tawny olive postmedial fascia, not reaching the inner margin; a series of tawny olive preterminal spots as on the upperside; fringes cream buff.

Expanse: ♂♂, 65–69 mm.

1 ♂ (holotype) and 1 ♂ (paratype), Pahang: Tras, 1912 (*Popp*). Paratype kindly presented to British Museum.

This handsome species is related to *D. lineata*, Wlkr., and *D. amydra*, Collnt., but apart from slight differences in pattern, may be readily distinguished by the cream buff ground-colour in place of whitish.

Adetoneura, gen. n.

♂. Proboscis absent. Palpus porrect, extending just beyond the frons, two-segmented, the second segment longer than the first. Eye round, about the width of frons. Antenna just over one-third the length of costa, bipectinate, the branches at middle about one-fourth the length of shaft. Abdomen slightly shorter than inner margin of hind-wing. Legs moderately haired. Process on fore tibia slightly longer than the tibia, flattened and pointed; mid tibia with one pair and hind tibia with two pairs of stout spurs of moderate length. Costa and inner margin of fore-wing almost straight, apex, tornus and termen moderately rounded; vein *Sc* parallel with the costa, R_1 anastomosing with *Sc* for a short distance at about one-third its length; R_2 and R_3 arising from R_4 at one-eighth

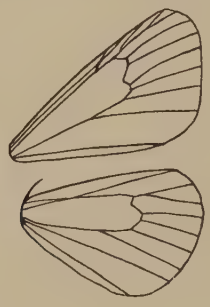

Fig. 1.—Venation of *Adetoneura lentiginosa*, gen. et sp. n.

and three-fifths the distance from cell to apex; R_5 from the cell at a point slightly nearer to M_1 than to the stalk of R_2–R_4; M_1 from just above the middle of the discocellulars; M_2 from just above the lower angle; M_3 from the lower angle; Cu_1 from about twice as far from M_3 as M_3 from M_2; Cu_2 from about three-fifths lower margin of cell; anal vein simple at base. Hind-wing with costa and inner margin slightly rounded, apex and anal angle moderately rounded, termen much rounded; vein *Sc* anastomosing shortly with the cell at about one-half; *Rs* and M_1 shortly stalked from the upper angle; M_2 from well above lower angle; M_3 from lower angle; Cu_1 from twice as far from M_3 as M_3 is from M_2; Cu_2 from about two-thirds lower margin of cell; A_2 and A_3 straight; frenulum present.

Type: *Adetoneura lentiginosa*, Collnt.

Distinguished by the unusual position of vein R_5 in the fore-wing and by vein R_1 anastomosing with the *Sc*. Resembles a *Dasychira* in general appearance.

Adetoneura lentiginosa, sp. n.

♂. Palpus Mars brown, lighter above and at the tip. Antenna clay colour, with dark spots scattered on the pectinations at irregular intervals. Head pinkish buff, above the palpi Mars brown. Thorax and abdomen, above and beneath, cinnamon buff mixed with

clay colour. Legs clay colour; at the middle of each tibia, on the outer side, a patch of Mars brown. Fore-wing pinkish buff, spotted in an irregular manner with cinnamon brown; a very broad medial band of cinnamon brown, occupying one-third of the wing, not extending above the centre of the cell excepting narrowly in the antemedial area where it reaches the costa, the proximal margin of the band being bowed (concavity basad), the distal margin bowed (concavity terminad) from vein R_4 to vein M_3, thence inwardly oblique to the inner margin; fringe pinkish buff. Hind-wing and fringe tawny olive. Underside of fore-wing tawny olive with the medial band very faintly indicated in a darker shade; a dark terminal line; fringe tawny olive. Underside of hind-wing tawny olive; a spot of Mars brown on the discocellulars; traces of a dark postmedial fascia and a dark terminal line; fringe tawny olive.

Expanse: ♂, 38 mm.

1 ♂ (holotype), Fiji Islands (*Ribbe*), 1891.

Cispia manifesta, sp. n.

♂. Palpus pinkish buff, mixed on the outer side with fuscous. Antenna Verona brown, the shaft somewhat lighter towards the base. Head, together with thorax and abdomen above and beneath, pinkish buff. Legs pinkish buff, mixed on tibia and tarsus with fuscous. Fore-wing white, rather thinly scaled; costa narrowly Verona brown; apical area to a depth of about 3 mm. Verona brown, this colour being continued down the termen, gradually narrowing, to the tornus, which it does not quite reach; a patch of Verona brown on the inner margin at one-third, and a slightly larger patch at two-thirds; fringe Verona brown, white at the vein-ends from vein M_2 to the anal vein. Hind-wing and fringe white; a series of indistinct interneural terminal spots of Verona brown, continuing on to the fringe. Underside of both wings as on upperside, but the terminal spots on the hind-wing more distinct.

Expanse: ♂, 50 mm.

1 ♂ (holotype), New Guinea: Astrolabe Bay.

In the British Museum is a ♀ from Wandammen Bay (July 1920, Pratt Bros., ex Joicey collection), with an expanse of 71 mm., which agrees well with the ♂ in markings. As the two localities are over 800 miles apart, I have not described it as an allotype.

THREE NEW DIPTERA FROM INDIA

By C. H. Curran.

The following pages contain descriptions of three new flies forwarded for determination by the Forest Research Institute and College, Dehra Dun, India. The types have been returned, paratypes being deposited in the American Museum of Natural History.

Syrphidae.

Xanthandrus, Verrall.

Seven described species have been referred to this genus. The following key separates the Old World forms, with the exception of *parhyalinatus*, Bigot.

Table of Species.

1. Third antennal segment at least twice as long as wide, cylindrical and tapering apically . . . . . 4.
   Third antennal segment shorter, laterally compressed . . . . . 2.
2. Wings rather deep brown, especially in front . . . . . *orientalis*, Sack.
   Wings very pale brown or cinereous hyaline . . . . . 3.
3. Second abdominal segment of male without pale spots; wings with brown tinge . . . . . *brevicornis*, Curran.
   Second abdominal segment of male with large pale orange spots; wings cinereous hyaline . . . . . *comtus*, Harris.
4. Wings hyaline; second abdominal segment mostly reddish-yellow *indica*, sp. n.
   Wings brownish, paler on basal third . . . . . *callidus*, Curran.

Xanthandrus indica, sp. n.

Third antennal segment long and subcylindrical; wings hyaline; abdomen with three yellow fasciae, the third interrupted. Length, 8·5 to 10 mm.

Male.—Head bluish black, cinereous pollinose, the frontal triangle mostly, and a broad median facial vitta, bare and shining; vertical triangle black, without pollen. Pile very pale yellowish or whitish. Frontal triangle swollen. Antennae dull reddish, elongate, the third segment more than twice as long as wide, rather tapering on the apical half, black on more than the upper half. Arista blackish.

Thorax aeneous or bluish black, the pleura with cinereous pollen on the anterior half. Pile yellowish, paler on the pleura. Scutellum without any black or coarse hairs.

Legs black, the broad apices of the anterior four femora reddish, basal third of anterior four tibiae yellow, the basal segment of the middle tarsi brownish-yellow. Pile yellowish, black on the tarsi and on the anterior and posterior tibiae.

Wings clear hyaline. Squamae pale yellowish, with pale orange border; halteres pale yellow.

First abdominal segment brownish-black; second yellow with the narrow anterior and lateral margins, a slender median vitta and the apical third or less, widened in the middle, black. Third segment with a little more than the basal half yellow, the lateral margins and posterior band black, the black fascia widening in the middle. Fourth segment black with a pair of very large, moderately separated, basal, subtriangular yellow spots, the spots widest laterally and rounded posteriorly. Pile yellowish. Venter black, the second and third sternites yellow.

Female.—Front narrow above, with a broad, grey pollinose depression extending across below the middle; pile of head all pale. Thorax with more whitish and shorter pile. First pale abdominal fascia less distinctly interrupted in the middle.

India: Rahatgaon, Hoshangabad, C.P., August 24, 25, 1926 (*S. N. Chatterjee*), holotype, ♂, and allotype, ♀, larva predacious on larvae of *Hyblaea puera*. The allotype is in the American Museum of Natural History.

Tachinidae.

Sturmia chatterjeei, sp. n.

Closely related to *masakensis*, Curran, and tracing to that species in my key to the African forms: differs in having the sexual patch in the male about as long as wide, longer third antennal segment, etc. Length, 8 to 9 mm.

Male.—Head silvery white pollinose, the parafrontals somewhat greyish above; ocellar triangle brownish-yellow. Front four-fifths as wide as greatest width of eye, the brown frontal vitta about as wide at the middle as parafrontal opposite. About ten pairs of frontals, the upper two reclinate, lower three below the base of the antennae where the

rows diverge strongly; a secondary row of bristles outside the frontals; hair not abundant except above. Ocellars moderately strong; outer verticals absent; no setae behind the occipital cilia; occipital pile white. Cheeks one-fifth as wide as eye-height, with abundant, short black hair. Parafacials about as wide as third antennal segment, slightly narrowing below. Vibrissae very slightly above the oral margin; four short bristles on the facial ridges immediately above the vibrissae. Palpi black. Antennae black, moderately wide; third segment two and one-fourth times as long as the second, the apex rather angulate above; arista thickened on basal half.

Thorax grey pollinose, with four shining black vittae. Acrostichals 3–3; dorsocentrals 3–4; sternopleurals 2–1–1; three pairs of strong marginal scutellars and a weaker, decussate apical pair; one pair of discals on the scutellum which is reddish on the apical third.

Legs black; middle tibiae with a single anterodorsal bristle; posterior tibiae evenly ciliate; pulvilli moderately long.

Wings cinereous hyaline, yellowish at the base. Squamae yellowish-white; knob of halteres black or brown.

Abdomen black, the second to fourth segments ashy pollinose with the apical fourth or less and a narrow median vitta bare. First and second segments with a pair of marginals, the third and fourth each with a row; fourth segment with short bristles dorsally which decrease in width toward the base; second segment with a median, basal triangle of short, erect bristly hair. Sexual patch on underside of third segment large, sub-cordate, about as wide as long.

Female.—Front five-sixths as wide as eye, gently widening from the vertex to the face; seven or eight pairs of frontals, two below the base of the antennae; only three bristles in the secondary row; two pairs of orbitals; ocellars longer; outer verticals half as long as verticals; third antennal segment only twice as long as second and broad for a female. Bristly triangle on dorsum of second abdominal segment at most weakly developed, the sides of the segment often broadly reddish basally.

MADRAS: Nilambur, June 7, 1927 (*S. N. Chatterjee*) holotype, ♂, allotype, ♀ and two ♂♂ and four ♀♀ paratypes. The species, like *S. masakensis*, Curran, is parasitic on the larvae of a species of Sphingid.

Prosopaea indica, sp. n.

Differs from *nigricans*, Egger, in having the palpi reddish and small ocellar bristles are present. Length, 7 to 9 mm.

Male.—Head silvery white pollinose, brownish-yellow at the vertex. Front four-fifths as wide as greatest width of eye, gently widening from the vertex to the anterior fourth; ten pairs of frontals, the lower three below the base of the antennae, the upper two strong and reclinate; ocellars scarcely half as long as the reclinate frontals; hair of parafrontals short, sparse and partly bristle-like. Outer verticals half as long as verticals; a single row of black occipital cilia, the occipital pile white. Cheeks three-tenths as wide as eye-height. Parafacials gently widening above, not as wide as third antennal segment. Vibrissae situated slightly above the oral margin; ridges bristled on a little more than the lower half, the bristles strong, five or six on either ridge. Palpi reddish, black-haired, slightly clavate. Antennae blackish, reaching to the lowest sixth of the face; second segment scarcely half as long as the third, which is angular at its upper apical corner; arista slender, thickened on basal half. Frontal vitta blackish, not more than half as wide as parafrontal.

Thorax cinereous pollinose, the mesonotum with four narrow, blackish vittae. Acrostichals 3–3; dorsocentrals 3–4; posterior sub-lateral strong; sternopleurals 2–1; six pairs of marginal scutellars, the apical pair smaller and decussate; one pair of discals. Apical half of scutellum brownish-red.

Legs black; middle tibiae with three anterodorsal bristles on the basal half; posterior

tibiae with short but not contiguous anterodorsal cilia and with one longer bristle beyond the middle. Claws and pulvilli small.

Wings cinereous hyaline, a little darkened toward the base but the base yellowish. Squamae whitish. Halteres brown.

Abdomen cinereous pollinose, somewhat tessellate, somewhat more than the apical fourth of the second and third segments shining. Second segment with a pair of strong marginals, third and fourth each with a row, the fourth with bristly, erect hair. Second segment on underside with sexual patch of dense, short black pile covering most of its length medianly and narrowed laterally but not reaching the lateral margins posteriorly; third segment with a larger patch which extends slightly on to the disc posteriorly.

Female.—Front four-fifths as wide as eye (the eye wider) and more strongly widening anteriorly; only eight pairs of frontals; two pairs of orbitals; hair shorter and sparser. Basal two antennal segments usually mostly reddish. Not more than the apical fifth of the abdominal segments shining black, the pollen fully as wide on the ventral part of the tergites as on the dorsal. First segment usually with a pair of small marginals.

Holotype, ♂, INDIA : Dehra Dun, August 31, 1928 (*S. N. Chatterjee*). Allotype, ♀, Dehra Dun, August 24, 1928. Paratypes, five ♂♂ and eleven ♀♀ from Dehra Dun (*S. N. Chatterjee*) and one ♂ and four ♀♀ from PUNJAB : Chichawatni (*C. F. C. Beeson*).

A NEW SPECIES OF *ISCHIOPSOPHA* (COL. : SCARABAEIDAE)

By K. M. HELLER.
Dresden.

Ischiopsopha superba, sp. n. ♂, ♀.

Ab *I. jamesi*, Waterh., differt colore fere tota aterrima in loco viridi, solum elytris plaga communi, in dimidia parte anteriore, in loco cinnabarina, prasina, rubro-marginata atque per suturam, anguste nigro-marginata divisa; antennis clava interdum obscure sanguinea; maxillarum stipite vitta testacea; prothorace subtiliter remoteque, latera versus distinctius punctulatis, secundum marginem lateralem transverse strigoso, lobo antescutellari apice angulato-exciso; elytris in dimidia parte posteriore, nigra, distinctius punctulatis atque hic, prope suturae margine exteriore, punctis remote seriatis; corpore subter, in utroque sexu, ventrito quarto lateribus oblique subtiliterque strigoso.

Long. 24, lat. 14 mm.—NOVA BRITANNICA, meridio-litorali : Möwe-Hafen, 1930 (*H. Hediger*) (typi in Mus. Dresden et Basel).

This remarkable and splendid species is almost entirely shining black, except for an apple-green patch on the elytra, similar to the vermilion patch of *I. jamesi*, but with bright red margins and divided by the narrowly black-bordered suture, its basal margin straight transverse, in front not surpassing the scutellum. Pedicel of maxillae with a yellowish stripe on the apex. Antennae sometimes with a dark blood-red club. The plastic differences consist in the sparse and fine puncturation of the thorax, limited on the outside by a broad, transversely scratched stripe along the lateral margin, rarely abbreviated in front, and the antescutellar lobe more or less angularly excised at the apex. Paramera of the forceps formed as in *I. jamesi*, but deep, shining black.

A small male specimen in the Dresden Museum, collected by E. Weiske on the Astrolabe Mountains (Brit. New Guinea), has the clypeus asymmetrical; in that the left acuminate lobe is divided by a deep, slightly oblique, linear incision into two parts; the edges of this incision are moreover strongly elevated, forming a compressed prominence obliquely truncate in front, in the anterior half of the clypeus.

NOTES ON SOME COCCIDAE FROM SURINAM, DUTCH GUIANA, WITH DESCRIPTIONS OF NEW SPECIES

By E. Ernest Green, F.E.S.

The following notes are founded upon a small collection of species of economic importance—chiefly pests of the coffee plant—submitted by Mr. G. Bunzli to the Imperial Institute of Entomology. In addition to those dealt with below, the collection contains examples of *Orthezia insignis*, Dougl., *Pseudococcus citri*, Risso, *P. maritimus*, Ehrh., and *P. bromeliae*, Bch.

Ortheziopa reynei, Laing.

Bull. Ent. Res., **15**: 383, 1925.

In his original description (*loc. cit.*) the author was unable to give any particulars of the ovisac, having seen only mounted preparations of the insect. The present collection contains examples with the ovisac (marsupium) complete, from which I am able to add the following description :—

Ovisac relatively stout, cylindrical, white, composed of flattened connate lamellae. The dorsum of the insect is covered with short white lamellae, in median, lateral and marginal series, increasing in length towards the posterior, where they are ligulate and greatly elongated, extending backwards and overlying the ovisac. The median dorsal series consists of erect lamellae, sloping backwards and bifurcates posteriorly.

Length of ovisac 1 mm.

Pseudococcus podagrosus, sp. n. (Fig. 1.)

Adult female broadly ovate to approximately circular, slightly narrower in front, evenly rounded behind, without projecting paranal lobes : margins of abdominal segments not produced. Eyes present but not conspicuous, unpigmented, situate near insertion of antennae. Antenna (*a*) relatively small compared with the size of the limbs (cf. *a* and *c*) :

Fig. 1.—*Pseudococcus podagrosus*, sp. n. (*a*) Antenna, × 50; (*b*) frontal cerarius, × 130; (*c*) 3rd leg, × 50; (*d*) paranal cerarius, × 130; (*e*) penultimate cerarius, × 130.

8-jointed, the 4th very short, the 8th longest. Labium elongate, its breadth approximately three-fifths of its length : tapering to an acute point. Legs not extending to margin of body, but large and robust, especially the 3rd pair (*c*) in which the femur and tibia are markedly turgid; trochanter and femur with some short setae on the side : tibia with

longitudinal series of short setae; coxa without translucent pores: claw robust, strongly falcate, without denticle. Anal ring relatively small: beaded: with 6 setae which are scarcely longer than the diameter of the ring. Cerarii in a complete series of 17 on each side, with occasionally a small interstitial cerarius (with 2 or 3 spines) between the normal first and second: the ultimate (*d*) and penultimate cerarii marked by more or less sharply defined chitinised areas: cerarial spines acutely pointed, the number varying from 4 to 10, the larger numbers being found on the 1st, 2nd and 16th; each cerarius with a few additional spiniform setae. Caudal setae (see *d*) relatively short, but stout. Body setae small and inconspicuous. Dorsal ostioles present but usually ill-defined. No medio-ventral ostiole. Micropores, of the usual obscurely trilocular form, numerous, evenly distributed. Discoid pores in two, loose, transverse series across the genital area.

Length 2·75–2·85 mm.; breadth 2·5–2·7 mm.

On *Montrichardia* sp., said to go over to coffee roots.

Resembling, in its approximately circular form and in the heavy chitinisation of the posterior cerarii, *Pseudococcus jacobsoni*, Green (*Tijds. v. Ent.*, **73**: 284, 1930); but differing from that species in the disproportionately small antennae, in the swollen third pair of limbs, and in the larger number of cerarial spines.

Pseudococcus radicis, sp. n. (Fig. 2.)

Female ovate, slightly narrowed posteriorly: the paranal lobes moderately prominent (*c*). Antenna (*a*) 8-jointed, the 8th longest, the 4th very short: antennal formula—8, 2, 3, (5, 7), (6, 1), 4. Eyes present, circular, of moderate size. Labium (*b*) distinctly dimerous; conical: the breadth at base approximately equal to the length. Legs well developed, extending beyond margin of body: tarsus approximately half the length of tibia: claw falcate, stout, without denticle: coxa of third leg without conspicuous translucent pores: tarsal and ungual digitules long and slender, the former filiform, the latter slightly dilated and extending beyond the tip of the claw. Anal ring (*c*) surrounded by a sinuous beaded

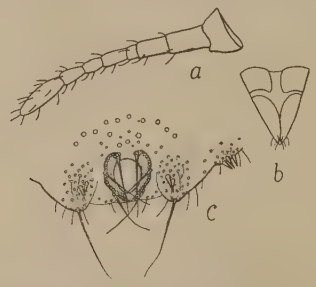

Fig. 2.—*Pseudococcus radicis*, sp. n. (*a*) Antenna, × 85; (*b*) labium, × 85; (*c*) posterior extremity, × 85.

rim: with six slender setae which are slightly shorter than the caudal setae. Paranal lobes weakly and diffusely chitinised. Cerarii in a continuous marginal series of 17 on each side; lightly chitinised: each with from 2 to 4 acute spines and several short setae: those on the paranal cerarii distinctly larger than the others. Anterior and posterior ostioles well defined. Medio-ventral ostiole transversely linear. Micropores very numerous, evenly distributed over the whole surface, with a slight concentration on the cerarii. Discoid pores few; in loose transverse series across the three posterior segments. Body setae small and sparse.

Length 1·8–2 mm.; breadth 1·25 mm.

"On Cyperaceae: goes over to coffee roots." G. Bunzli.

Phenacoccus surinamensis, sp. n. (Fig. 3.)

Adult female ovate: the length slightly less than twice the breadth: paranal lobes scarcely prominent. Antennae (*a*) 9-jointed: the 2nd and 9th equal and longest, the 3rd slightly shorter. Eyes relatively large and prominent: roundly conical. Rostral loop extending slightly beyond the insertion of the second pair of legs. Legs robust: extending well beyond the margins of the body: tarsus of 3rd leg approximately half the length of the tibia: claw (*b*) stoutly falcate, with a distinct denticle near its distal extremity: ungual digitules apically dilated. Anal orifice beaded: large and conspicuous: with 6 long, moderately stout setae, which are approximately half the length of the caudal setae. Dorsal ostioles not conspicuous: the posterior pair with turgid lips. Medio-ventral ostiole (*c*)

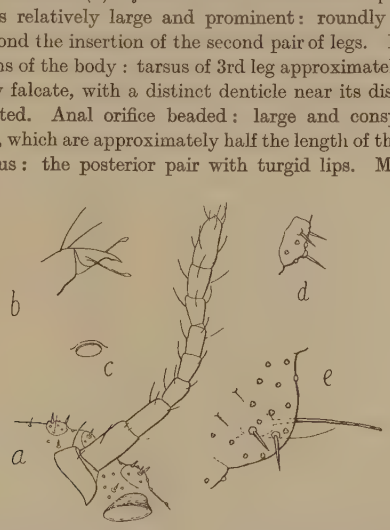

Fig. 3.—*Phenacoccus surinamensis*, sp. n. (*a*) Antenna and frons, × 85; (*b*) foot, × 265; (*c*) medio-ventral ostiole, × 85; (*d*) antepenultimate cerarius, × 265; (*e*) paranal lobe and cerarius, × 265.

transversely ovate. Cerarii (*d*, *e*) prominent: not markedly sclerosed, but distinctly circumscribed: in an unbroken series of 18 on each side: each cerarius with 2 (occasionally 3) slender lanceolate spines: without marked concentration of micropores. A few small lanceolate spines are distributed sparsely over the dorsum. Micropores numerous, prominent, projecting above the surface of the derm. In addition to the normal micropores are others that communicate with short cylindrical ducts: these latter are more numerous and conspicuous towards the margins of the body. Discoid pores confined to the venter of the posterior segments. Body setae relatively sparse, larger and more crowded on frons: each springing from a rounded tubercle.

Length 1·25 mm.; breadth 0·75 mm.

Described from a single adult female which, being associated with several nymphs, may not have attained its full dimensions. The specimens were labelled :—" On Labiatae, going to coffee roots if *Ortheziopa* is present."

Rhizoecus coffeae, Laing.

Bull. Ent. Res., **15**: 383, 1925.

Laing (*loc. cit.*) describes and figures the female insect only. Amongst the material now under consideration I have found males of this species. They are very minute and apterous, or with the merest rudiments of wings. But the structure of the sexual organs shows them to be mature.

Adult male (fig. 4) creamy-white. Head and thorax confluent, without any distinct neck. Antennae 5–7-jointed, often asymmetrical and with the individual joints varying considerably in size: all the joints furnished with setae: the terminal joint abruptly pointed at apex, with 2 or 3 stouter curved setae. The usual four ocelli are present but unpigmented. Legs slender, but well developed: the tibiae and tarsi with some strong setae: the claws long, slender and acute, with simple digitules. Rudimentary wings

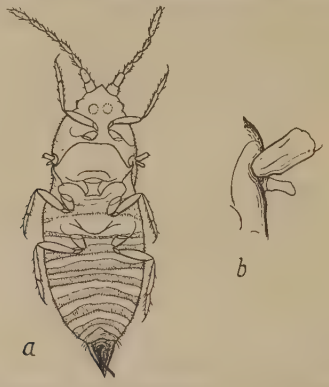

Fig. 4.—*Rhizoecus coffeae*, Laing. (*a*) Adult male, × 50; (*b*) rudimentary wings, × 250.

(fig. 4 *b*) consisting of two short, stout, truncate members, articulated to the thorax: the upper (larger) member with a single curved seta at its distal extremity: the lower (smaller) member presumably represents the base of the halter. Abdomen with a narrow sclerotic band encircling each segment: these bands are colourless but are rendered conspicuous by the presence of crowded setae. Penial sheath broad at base and tapering to a sharp point: denser than the body of the insect, which is mostly membraneous.

Length approximately 0·75 mm.

To the unaided eye these minute, colourless insects might be mistaken for larvae or young nymphs. They are fitted only for a subterranean existence and apparently pass their whole lives in the soil, where the presence of functional wings would be an encumbrance.

In his description of the adult female, I think that Laing has slightly exaggerated the length of the claw. He states that it is "approximately one-third the length of tibia and tarsus together." In all my examples the claws are less than one-quarter the length of the combined tibia and tarsus.

Early adult females are narrower than the fully adult, the dimensions being 1·3 by 1 mm. Nymphal females are proportionately more elongate, being twice as long as they are broad.

Rhizoecus moruliferus, sp. n. (Fig. 5.)

Adult female elongate, narrow. Antenna (*a*) geniculate, 5-jointed: basal joint large and robust: 2nd joint smallest: 5th joint robust, as long as or longer than the 2nd, 3rd and 4th together, with four stout falciform setae on its apical half: all the joints with a few slender setae. Interantennal space approximately equal to the 4th and 5th antennal joints together. Eyes wanting. Labium narrow, its length approximately twice its breadth at base: obscurely dimerous. Rostral loop extending as far as the insertion of the 2nd pair of legs. Legs (*b*) normal: tibia slightly longer than tarsus: claw long and slender: all the limbs with a longish spine on the inner margin of the tarsi: tarsi of second limbs (only)

with an additional but shorter spine : tibiae of 2nd and 3rd limbs (only) with a similar spine at the distal extremity. Spiracles without grouped pores. Dorsal ostioles (*f*) conspicuous, heavily rimmed. No medio-ventral ostioles. Anal ring of the areolated type, the areoles elongate and sinuous : with six long slender setae. Paranal lobes (*g*) scarcely prominent : each with a conspicuous group of longish setae, of which two are markedly longer and stouter than the remainder. Body setae sparse, small and inconspicuous : one or two longer setae on the lateral margins of the abdominal segments. Derm with numerous, obscurely trilocular

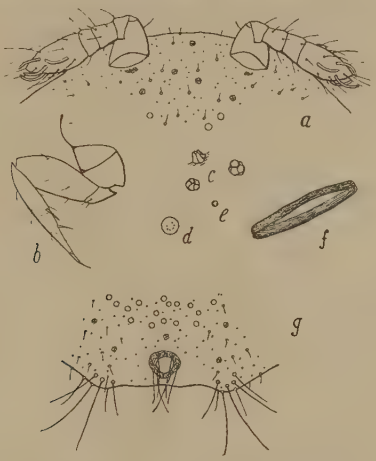

FIG. 5.—*Rhizoecus moruliferus*, sp. n. (*a*) Antennae and frons, × 85; (*b*) 3rd leg, × 85; (*c*) moruliform organs, × 265; (*d*) discoid pore, × 265; (*e*) micropore, × 265; (*f*) posterior dorsal ostiole, × 130; (*g*) posterior extremity and anal ring, × 85.

micropores (*e*), evenly distributed over the whole body : with scattered series of rather large discoid pores (*d*) across each segment, but more numerous on the anal and pre-anal segments : also with conspicuous moruliform organs (*c*) in irregular series across each segment, but most numerous on the first four abdominal segments. These moruliform organs, viewed in profile, appear to consist of compact groups of flask-shaped bodies standing out above the surface of the derm, but no definite orifices are noticeable on their apices.

Length 2·75 mm.; breadth 1·25 mm.

At roots of *Coffea liberica*, in association with *R. coffeae*, *Geococcus coffeae* and *Pseudorhizoecus proximus*.

Rhizoecus caladii, sp. n. (Fig. 6.)

Adult female (*a*) rather broadly ovate, the breadth across the middle being considerably more than half the total length : evenly rounded at both extremities, without prominent paranal lobes. Antenna (*b*) geniculate, 6-jointed : the 2nd very short : 6th longest, with four stout falcate setae : the 5th with a single falcate seta. Interantennal space equal to the length of the five terminal segments together. Eyes present, but minute and unpigmented. Labium longer than its width at base, tapering evenly to a point, broadly canaliculate. Rostral loop not extending so far as the insertion of the second pair of limbs. Legs relatively small : tibiae and tarsi of approximately equal length : tibiae of 2nd and 3rd pairs with a long apical spine : claw long and slender. Anterior and posterior dorsal ostioles sharply defined. No medio-ventral ostiole. Anal ring (*d*) areolate, the areolae elongate and sinuous : with six longish setae. The position of the suppressed paranal lobes is

indicated by a group of three moderately long setae radiating from a point on each side of the anal ring (see *d*). Dorsum with from four to six longitudinal series of conspicuous moruliform organs, one or more of which may be incomplete. These organs (*c*) consist of 3 (sometimes 4) flask-shaped bodies which are contorted obliquely. Viewed in profile they are seen

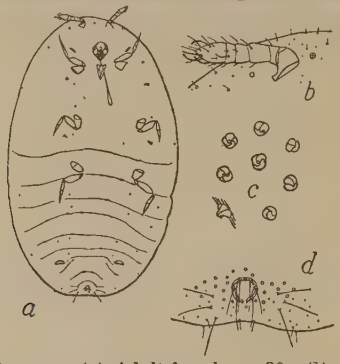

Fig. 6.—*Rhizoecus caladii*, sp. n. (*a*) Adult female, × 30; (*b*) antenna and part of frons, × 85; (*c*) moruliform organs, × 265; (*d*) anal ring and posterior extremity, × 85.

to project from the dermal surface. They are homologous with the more regularly trilobate organs exhibited by *R. decoratus* and by species of *Geococcus*. Micropores minute and evenly distributed. Discoid pores crowded around the genital area and—very sparsely—over the rest of the venter. Body setae very few, minute and inconspicuous.

Length 1·75 mm.; breadth 1 mm.

"Gathered from *Caladium bicolor*." Said to go over to coffee roots.

Differs from *R. moruliferus* in the smaller number of the moruliform organs, in the larger number of antennal joints (6 instead of 5), and in the more ovate form of the body. It is also distinguished by having only 3 long setae on each side of the anal segment.

Geococcus coffeae, sp. n. (Fig. 7.)

Female (? nymph) (*a*) elongate, approximately three times as long as the breadth of the first abdominal segment. The posterior (anal) segment heavily chitinised and produced

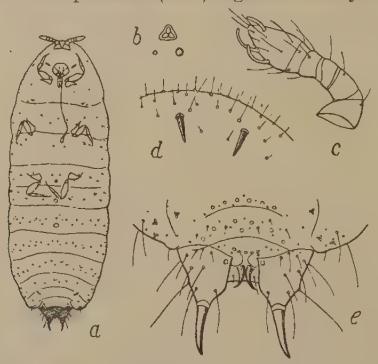

Fig. 7.—*Geococcus coffeae*, sp. n. (*a*) Female, × 40; (*b*) dermal pores, × 400; (*c*) antenna, × 200; (*d*) frons, dorsal view, × 200; (*e*) posterior extremity, dorsal view, × 200.

into two prominent, conical, paranal lobes, each of which terminates in a stout tusk-like spine: with a pair of stout claw-like spines, on the dorsum, between the lobes (see *e*). There

is a smaller pair of tusk-like spines on the dorsum of the frons (*d*). Antenna (*c*) geniculate, 6-jointed : 6th longest, broad at base, narrowed to a blunt point at apex, with three stout falciform setae : 5th and 6th broadest, fused together to form a club. Without vestigial eyes. Labium elongate, narrow. Rostral loop extending beyond the insertion of the second pair of legs. Limbs small but well developed : femur and tibia robust : tarsus slender, tapering to the long and slender claw. Anal ring concealed by the density of the terminal segment. Anterior and posterior dorsal ostioles sharply defined. Medio-ventral ostioles in a series of three, increasing in size, the hindermost being the largest. Derm with pores of three kinds : very minute, obscurely trilocular micropores, in loose zones across each segment : larger discoid pores, in scattered series across two or three posterior segments : and still larger trilobed pores, sparsely distributed over the whole body. The relative size and appearance of the three forms is shown at (*b*). The loculi of the larger trilobed pores are acorn-shaped. Body sparsely covered with fine setae, which are longer on the margins of the posterior segments and on the paranal lobes.

Length 1·5–2 mm. ; breadth approximately 0·5 mm.

Associated with *Rhizoecus coffeae*, *Rhizoecus moruliferus* and *Pseudorhizoecus proximus* on roots of coffee. These four species were included in a single tube, labelled " All forms of *Rhizoecus* from one coffee tree (*C. liberica*)."

Although these insects are apparently pre-adults, the nymphal characters of the known species are so well marked that they can be separated by these characters alone. The present species may be distinguished from nymphs of *G. radicum*, Green, by the densely chitinised anal segment, and from *G. oryzae*, Kuw., by the presence of frontal spines. Nymphs of the remaining known species—*citrinus*, Kuw.—have not been observed.

Pseudorhizoecus, gen. nov.

Referable to the subfamily PSEUDOCOCCINAE, but characterised by the complete absence of setae on the anal ring, which is a simple aperture, without either the beaded or areolated structure found in other genera of the subfamily.

The two species, now described for the first time, are root Coccids, with underdeveloped, apterous males.

Genotype : *P. proximus*, Green.

Pseudorhizoecus proximus, sp. n. (Figs. 8, 9.)

Adult female (8—*a*) approximately spherical : creamy white. Antennae (8—*b*) obscurely geniculate, their bases adjacent, tapering evenly to the pointed apex, 5-jointed : 5th joint

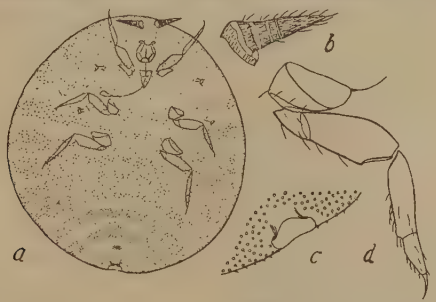

FIG. 8.—*Pseudorhizoecus proximus*, sp. n. (*a*) Adult female, × 40; (*b*) antenna, × 130; (*c*) posterior extremity and anal orifice, × 130; (*d*) 3rd leg, × 130.

longest, as long as or longer than the previous three together : all with strong setae, but without specialised falcate setae. Eyes completely wanting. Legs (8—*d*) well developed :

relatively short but moderately robust: claw long and slender: tarsus slightly exceeding half the length of the tibia: tibia and tarsus together approximately equal to the united femur and trochanter: coxa without translucent pores. Anal ring (8—*c*) relatively large and conspicuous, but quite simple, neither beaded nor areolated: completely devoid of the usual anal-ring setae. Derm with a few obscurely trilocular pores, on the intersegmental areas only: no discoid pores. Body with a crowded zone of minute setae across each segment, each seta arising from a small circular pustule.

Dimensions (under compression) 0·95 by 0·90 mm.

Adult male (9—*a*) apterous, without vestiges of wings: minute and weakly developed: colourless or creamy-white. Cephalic region not differentiated from the body: without eyes or ocelli. Antenna (9—*b*) short, 6-jointed: of similar form to that of the female.

Fig. 9.—*Pseudorhizoecus proximus*, sp. n. (*a*) Adult male, × 40; (*b*) antenna, × 130.

Mouth-parts very faintly indicated: not functional. Limbs well developed and robust. Genital sheath short, acutely pointed. Body with crowded zones of minute setae, as in the female.

Length 0·65 mm.

At roots of coffee. Superficially very similar to *Rhizoecus coffeae*, Laing, with which it shares the same habitat, but so distinct, structurally, that it cannot be included in the same genus.

Pseudorhizoecus migrans, sp. n. (Figs. 10, 11.)

Adult female (10—*a*) very broadly ovate: posterior extremity slightly produced.

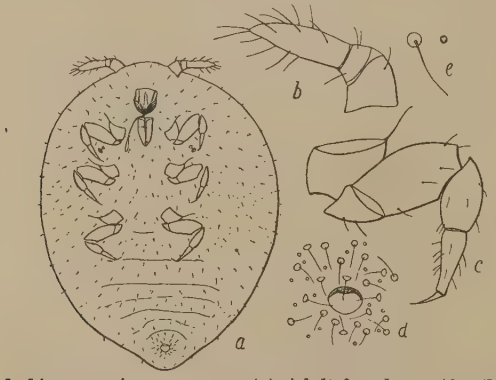

Fig. 10.—*Pseudorhizoecus migrans*, sp. n. (*a*) Adult female, × 40; (*b*) antenna, × 130; (*c*) 3rd leg, × 130; (*d*) anal orifice and surrounding area, × 130; (*e*) a single seta and micropore, × 300.

Colour milky white. Antenna (10—*b*) geniculate, 3-jointed: 3rd elongate, bluntly pointed, longer than 1st and 2nd together: 2nd joint shorter than its width: each joint with a few

longish setae. Labium elongate, bluntly pointed. Rostral loop short, scarcely extending beyond the apex of the labium. Legs (10—*c*) well developed and robust, but not extending to the margin of the body: tibia and tarsus approximately equal in length: tibia turgid: claw long, slender and acutely pointed. Anal ring (10—*d*) simple, surrounded by a group of longish slender setae, each seta arising from a conspicuous circular pustule. Derm with scattered setae similar to those surrounding the anal ring, and with scattered, obscurely trilocular micropores.

Length 1–1·25 mm.; breadth 0·75 mm.

Adult male (11—*a*) apterous: undeveloped: without vestiges of wings. Antenna (11—*b*) 3-jointed: the terminal joint claviform, the apex tapering to a blunt point, more than twice the length of the combined 1st and 2nd, with numerous longish slender setae and a single stouter seta at about one-third from the apex. Without eyes or ocelli. Limbs well

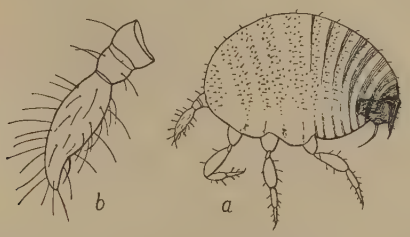

Fig. 11.—*Pseudorhizoecus migrans*, sp. n. (*a*) Adult male, × 40; (*b*) antenna, × 130.

developed, robust. Genital armature heavily chitinised. Body with micropores and setae arranged in loose transverse series, the setae arising from circular pustules which are distinctly larger than those on the female: abdomen with narrow sclerotic zones.

Length approximately 0·75 mm.

On the roots of various grasses (*Paspalum*, etc.), from which it is said to migrate to the roots of coffee plants.

Differs from *P. proximus* in having 3- (instead of 5-) jointed antennae, in the more robust limbs, and in the character and disposition of the dermal setae.

Cryptostigma bunzlii, sp. n. (Fig. 12.)

Adult female broadly and irregularly ovate, the greatest breadth almost equalling the total length: deeply incised at the stigmatic areas and at the posterior extremity, where the anal cleft equals (approximately) one-quarter the total length of the body. Moderately convex above: flattish or slightly concave below. Colour (of examples in alcohol) pale reddish-brown. Dorsum rigid: transversely corrugate. Venter irregularly corrugate on thorax: transversely so on venter. After maceration in potash the derm of the older females is seen to be crowded with small rounded cells which are filled with dark pigment: each cell with a central pore. In early-adult females the pigmented cells are absent and the pores are translucent. In the older examples the structural characters are much obscured by the pigmented cells, but they may be studied in the early-adult female (*a*). Antennae and limbs minute, vestigial and difficult to locate. The antennae (*c*) are situate about halfway between the anterior margin and the tentorium, and consist of a wrinkled basal piece and an irregularly cylindrical distal piece with traces of suppressed segmentation: the truncate apex with several short setae. The first pair of limbs (*b*) are the larger and better developed, with coxa, femur and tibio-tarsal segments recognisable. The second (*e*) and

third (*f*) pairs are more reduced. Each limb bears a stout, well-formed claw. The inner extremity of each stigmatic cleft is bordered by a stout, lunate, sharply defined, densely sclerotised plate (*d*), with a crowded cluster of pores connecting it with the adjacent spiracle. Two minute and widely separate, dentiform, stigmatic spines can (with difficulty) be distinguished on the convex edge of each plate. There are no specialised marginal setae. Anal operculum (*g*) surrounded by a broad, heavily sclerosed zone. The structure of the anal ring is completely obscured by the density of the superimposed parts. A conspicuous

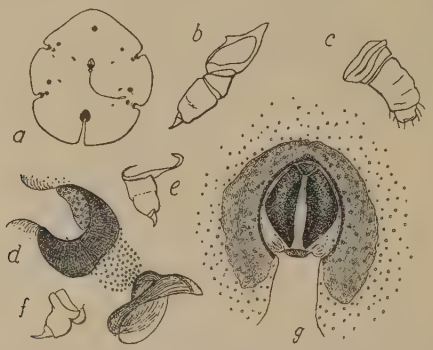

Fig. 12.—*Cryptostigma bunzlii*, sp. n. (*a*) Early-adult female, × 4; (*b*) 1st leg, × 130; (*c*) antenna, × 130; (*d*) stigmatic cleft and spiracle, × 50; (*e*) 2nd leg, × 130; (*f*) 3rd leg, × 130; (*g*) anal operculum and surrounding area, × 50

feature, on the dorsum, is the presence of five, irregularly circular, cribriform plates; of which one is situated centrally, above the frons, and one shortly anterior to each spiracle. The structure of these plates appears to be finely and regularly granulate. Derm studded with minute pores which—in profile—appear to be cylindrical. Towards the posterior margin of the body, and distributed more sparsely over the general surface, are many larger circular pores, and—very sparsely—some small clusters each of three or four closely connected pores.

Length 4·5–7 mm.; breadth 4–6 mm.

"On large roots of *Erythrina* exclusively: causes great damage in some years." *G. Bunzli.*

This insect resembles—and was at first mistaken for—a species of *Alecanopsis*, a genus which hitherto has been recorded from Australia only. Subsequent study, however, proved it to be referable to the genus *Cryptostigma*, Ferris. The type of the genus (*ingae*, Ferris) was described from Porto Rico. The present species differs from *ingae* in the presence of well-defined cribriform plates. No other species has yet been described. *Cryptostigma* is distinguished from the allied genus—*Cribrolecanium*, Green, by the presence of densely sclerosed plates, guarding the spiracles.

NEW NEOTROPICAL CURCULIONIDAE (COL.)

By Sir Guy Marshall, C.M.G., D.Sc., F.R.S.

Subfamily Brachyderinae.

Lachnopus buchanani, sp. n.

♂♀. Derm piceous brown, with rather sparse whitish and yellowish scales, the latter rather denser and forming more or less macular stripes; prothorax with six irregular yellowish stripes: one half-way between the median line and the dorsal margin, one on the dorsal margin, and one above the coxa; elytra with interrupted macular yellowish stripes on intervals 3, 5, 7 and a more continuous one near the lateral margin; underside with sparse narrower whitish scales down the middle and denser rounded yellowish scales laterally, the anal ventrite with dense whitish hair-like scales throughout.

Form elongate. *Head* with scattered shallow squamigerous punctures, the scales denser above and below the eyes; forehead much broader than an eye, flattened transversely, with a small median fovea; eyes strongly convex, almost semicircular. *Rostrum* somewhat longer than the head, narrowing from the base to the antennae and widening at the genae, the dorsal outline almost flat in the basal half and gradually declivous in front; the dorsum evenly convex transversely, with fairly close shallow squamigerous punctures, without carinae but with a very short interantennal stria in ♂ (usually obsolete in ♀), the apical area not impressed; the scrobes curved strongly downwards, ending at some distance from the eyes. *Antennae* with the scape exceeding the hind margin of the eye; the funicular joints progressively shortening from 1–5, 5–7 subequal. *Prothorax* slightly broader than long, almost parallel-sided in the basal half, then gradually narrowing in a curve to the apex but not constricted, the base subtruncate; the dorsum almost flat longitudinally, with very shallow close squamigerous punctures; the scales elliptical, all lying transversely, the whitish ones usually much narrower than the yellowish ones. *Scutellum* bare, with obsolescent punctures. *Elytra* very narrow in ♂ (2 : 1), broader in ♀, much wider than the thorax at the roundly rectangular shoulders, parallel-sided from there to behind the middle, acuminate behind, with the apices separately produced into a short point; the very shallow striae with spaced punctures, each containing a fan-like scale; the intervals much broader than the striae, almost flat, the yellowish scales broadly ovate (nearly round laterally) and more or less contiguous, the whitish scales much narrower and sparse; at the top of the declivity a sutural patch of 15–20 long erect setae in ♀ only. *Legs* rather densely squamose; all the tibiae denticulate internally, the posterior pairs of the ♂ clothed with long soft hairs. *Aedeagus* of ♂ with the apical lip nearly as wide as the tube and parallel-sided almost to the apex, which is roundly subtruncate with the edge slightly turned up.

Length 6·0–8·5 mm.; breadth 2·0–3·4 mm.

Cuba: Buenos Aires, 2350–2800 ft., Trinidad Mts., 2 ♂♂, 5 ♀♀, on *Coffea arabica*, 4.v.1932 (type); San Blas, Trinidad Mts., 2 ♂♂, 1 ♀, 5.v.1932 (*S. C. Bruner & A. Otero*).

Lachnopus bruneri, sp. n.

♂♀. Derm piceous to black, closely mottled with contiguous patches of golden yellow scales, the interspaces bearing sparse grey scales; underside laterally with dense golden scales and small bare black setigerous punctures (but the metepisterna quite bare) and more or less denuded down the middle, the anal ventrite with hair-like scales throughout.

Very similar to *L. buchanani*, sp. n., but larger and differing in the following characters:—*Head* with the eyes much less convex and the forehead less depressed. *Prothorax*

with smaller and more widely separated punctures, without any narrow whitish scales, the yellow scales forming an irregular narrow median stripe and two broader ones on the pleurae. *Scutellum* squamose. *Elytra* without definite macular stripes, the lateral scaling actually reaching the margin (at least in the basal half); the apex more produced, and the processes rather longer and sharper. *Legs* with the outer apical angles of the hind tibiae distinctly angulate and not obliquely rounded off. *Aedeagus* with the apical lip more narrowed distally and much more strongly up-turned at the apex.

Length 8·0–10·2 mm.; breadth 2·6–3·7 mm.

Cuba: Buenos Aires, 2350–2800 ft., Trinidad Mts., 2 ♂♂, 1 ♀, 4.v.1932 (*S. C. Bruner & A. Otero*).

Lachnopus oteroi, sp. n.

♂♀. Derm piceous black, with sparse minute round white scales and scattered small round spots formed of larger round white scales; upper surface of the head and rostrum and the pronotum with sparse isolated small scales, lower surface of head with denser larger scales, and the propleurae with a broad stripe of large scales; elytra with the small scales arranged more or less in rows, there being usually one on each side of each puncture; in ♂ a spot of 12–20 large scales at the middle of interval 5 and the following smaller spots: one slightly in front of the middle on int. 9 and three or four on the apical half (on ints. 3, 5, 7); in ♀ the small spots are more numerous, but confined to ints. 3, 5, 7, 9, and there may be as many as five or six on int. 3; mesepisterna with a broad oblique stripe of dense large scales; metasternum with numerous large scales laterally (less in ♀) which become denser in the posterior angle, the metepisterna bare in the basal half and with a dense patch at the apex; venter with separated white scales laterally except on the anal ventrite.

Form elongate. *Head* with scattered squamigerous punctures; forehead flattened, its width about equal to the length of an eye, with a deep median fovea; eyes oval, moderately convex. *Rostrum* as long as the head, almost parallel-sided, the dorsal outline flat in the basal half, sparsely punctate, without carinae but with a short shallow interantennal furrow, the anteocular area not impressed; the scrobes curved strongly downwards. *Antennae* with the scape far exceeding the hind margin of the eye; the funicle with joints 1 and 2 subequal, 3–5 progressively shorter, 5–7 subequal. *Prothorax* a little broader than long, slightly widening from the base to behind the middle and much narrowed in front, being broadly but shallowly constricted at the apex, the base truncate; the dorsum with unusually shallow, more or less confluent punctures and sparse small round scales. *Scutellum* with separated scales, often abraded. *Elytra* narrow and elongate in both sexes (2 : 1), broader than the prothorax at the roundly prominent shoulders, from there gradually narrowing behind, subacuminate posteriorly, with the apices separately and rather broadly rounded; the shallow striae with rather close punctures, which contain no scale and are much reduced behind; the intervals as broad as the punctures and slightly convex, the septa between the punctures tending to unite laterally and form transverse ridges. *Legs* piceous brown, with a slight metallic reflection, aciculate, with very sparse small round scales; all the femora granulate on the lower surface (especially the hind pair) in ♂; all the tibiae denticulate internally, the teeth being small in ♀ and much longer and stouter in ♂, especially in the hind pair, the posterior pairs of ♂ clothed with long soft hairs. *Underside*: the middle of the metasternum and the two basal ventrites granulate and clothed with dense soft erect hairs in ♂.

Length 6·6–7·4 mm.; breadth 2·2–2·6 mm.

Cuba: Buenos Aires, 2350–2800 ft., Trinidad Mts., 3 ♂♂, 1 ♀, 4.v.1932 (*S. C. Bruner & A. Otero*).

The nearest ally of this species is *L. floridanus*, Horn 1876, which is a broader insect with the elytra parallel-sided to beyond the middle and jointly

rounded at the apex, the larger scales being elliptical and the small ones very narrow; in the ♂ the metasternum and venter have no granules or long erect hairs.

I am indebted to Mr. L. L. Buchanan, of the Bureau of Entomology, Washington, D.C., for the opportunity of studying these three species of *Lachnopus*. The types are in the British Museum and cotypes in the United States National Museum.

Subfamily Leptopinae.

Hypsonotus frontalis, sp. n. (Fig. 1.)

♂♀. Derm piceous brown to black with dense scaling varying from grey to light brown; pronotum usually with a broad subdenuded median stripe which narrows to a point at the apex; elytra with a rather indistinct common irregular transverse brown band before the middle extending to stria 4, and at the summit of the declivity a broad common V-shaped dark brown band extending to stria 7–9, which varies considerably in width and shape,

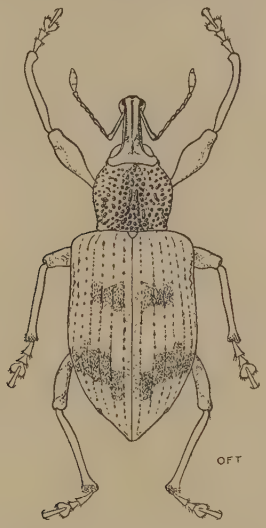

Fig. 1.—*Hypsonotus frontalis,* sp. n., ♀.

being usually denticulate on both margins and there edged with whitish scaling, the apical area being isabelline to brown; underside with dense brownish grey or greyish brown scaling, the coxae more or less metallic green. There are often a few metallic green scales scattered about on the upper surface.

Head with very fine shallow punctures and minute narrow metallic scales; the forehead somewhat elevated and flattened, owing to the dorso-lateral carinae of the rostrum being continued on to the forehead as well as the sulcus below them; in the middle a short deep sulcus. *Rostrum* sharply tricarinate, the lateral carinae parallel and continued on to the forehead, but not the median one; a deep longitudinal furrow in front of the eye. *Antennae* with the two basal joints of the funicle equal. *Prothorax* slightly broader than long (13 : 11), rounded at the sides, widest beyond the middle, constricted at both base and apex, the dorsal apical margin subtruncate or feebly arcuate, the base shallowly

bisinuate; the dorsum convex in profile, highest beyond the middle, rugosely and confluently punctate, the intervals bearing low shiny granules, which are larger and often confluent in the middle of the disk; the setae short, scale-like and inconspicuous. *Scutellum* shield-shaped, finely punctate, and with sparse setiform scales. *Elytra* parallel-sided from the prominent subrectangular shoulders to beyond the middle, subacuminate and jointly rounded at the apex; the dorsal outline moderately convex from the base to the declivity and there almost perpendicular, with the suture somewhat elevated; the shallow striae containing large elongate punctures which diminish posteriorly and laterally, the septa in the basal half as high as but narrower than the intervals and often uniting to form transverse ridges; the setae small, recumbent, scale-like and inconspicuous. *Legs* with dense ovate isabelline scales, the femora paler on the apical third and with metallic green scales on the inner face; the front tibiae not very strongly incurved at the apex and inconspicuously denticulate, the hind pair without any long apical tuft of setae in ♂. *Venter*: anal ventrite of ♂ not emarginate at the apex, but with a short median costa on the apical half.

Length 9·0–13·5 mm.; breadth 3·5–6·0 mm.

Brazil: Bahia, 11 ♀♀ (*Reed*—type); Bahia, 2 ♂♂, 5 ♀♀, feeding on leaves of cacao, 1930 (*Dr. G. Bondar*).

Allied to *H. irrigatus*, Germ., and *nubilosus*, Boh., but these two species differ *inter alia* in having the lateral carinae on the rostrum much reduced and not continued on to the head; the prothorax is less rounded laterally, much more coarsely granulate, and more produced at the apex; the hind tibiae of the ♂ have a long apical tuft, and the anal ventrite bears no median costa and is emarginate at the apex.

Subfamily Byrsopinae.

Genus **Hustachius,** gen. nov.

A few years ago Mr. A. Hustache described a new species of *Spartecerus* from Argentina (1926, *An. Mus. Nac. Hist. Nat. Buenos Aires*, **34**: 171, pl. iv, fig. 1). The discovery of an indigenous species of this wingless genus, so far known only from South and East Africa, was so remarkable from the point of view of geographical distribution that a fuller study of the species seemed desirable. This has been rendered possible by the kindness of Mr. W. D. Hincks, of Leeds, who has generously presented his only specimen of the species to the British Museum.

In spite of a striking superficial resemblance to *Spartecerus* an examination of the insect shows that it differs from that genus in many points of taxonomic importance, and it is necessary to propose a new genus for it, which I have pleasure in dedicating to Mr. Hustache, who has added so greatly to our knowledge of the Curculionidae.

The distinctions between the two genera may be shown in tabular form:—

Spartecerus.	*Hustachius.*
Mentum densely setose, filling the buccal cavity; submentum not pedunculate; mandibles multisetose, mandibular scar rounded.	Mentum bare, comparatively small, leaving the maxillae fully exposed; submentum pedunculate; mandibles trisetose, the scar triangular.
Metepisterna fused with the metasternum, the suture obliterated; hind coxae reaching elytra.	Metepisternal suture distinct throughout; hind coxae widely separated from elytra.

Spartecerus.	*Hustachius.*
Scutellum concealed.	Scutellum distinct.
Elytra truncate at base, not fitting closely to prothorax, stria 10 broadly interrupted in middle.	Elytra deeply sinuate at base and embracing base of prothorax, stria 10 complete.
Corbels of hind tibiae open.	Corbels of hind tibiae enclosed.
Tarsi squamose beneath and with very stout spine-like bristles; claws without a basal lateral seta.	Tarsi with pads of soft hairs beneath; claws with a seta.

Genotype: *Spartecerus americanus*, Hust.

So far as we know at present the new genus has no near allies in South America, and it is somewhat of a taxonomic puzzle, because it has mandibular scars combined with a phanerognathous mentum and a deep prosternal furrow. The only other genus known to me which presents this combination of characters is the South African *Hoplitotrachelus*, Schönh., which also has the submentum pedunculate, the mandibular scars triangular, and the hind coxae widely separated from the elytra; but in the other characters mentioned in the table above it resembles *Spartecerus*.

If the significance of the phanerognathous mentum is ignored, the nearest ally of *Hustachius* is the monotypic Australian genus, *Barypadus*, Pasc. (near *Leptops*), which strikingly resembles it in general form and sculpture. But I prefer to place the genus provisionally near *Hoplitotrachelus* in the Byrsopinae.

Subfamily Hylobiinae.

Arniticus bondari, sp. n. (Fig. 2.)

♂♀. Derm piceous brown, with rather sparse minute brown scales and ochreous or whitish markings; head with a narrow ring of ochreous scales round the eyes; pronotum with a few indefinite spots composed of a few sparse narrow ochreous or whitish scales and on each side in the basal half an inwardly curved narrow pale stripe in a line with interval 5 of the elytra; scutellum yellowish; elytra with an elongate whitish spot at the base of interval 6, some irregular indefinite spots along striae 8–10, and on the apical half a large broad lunate patch, which is either ochreous with whitish margins or entirely whitish; this patch starts on stria 2, runs obliquely backwards to the outer side of the posterior callus, and there links up with a submarginal patch running from behind the callus nearly to the apex; sternum laterally mottled with ochreous or whitish scales, which are larger than those on the elytra.

Head with large shallow confluent punctures, the forehead about half as wide as the base of the rostrum, flat, with a shallow median fovea. *Rostrum* of ♂ a little longer than the pronotum (9 : 7), feebly curved, with rugose shallow confluent punctures, a fine median carina, and a broad deep lateral sulcus, the basal angulation of the scrobe produced into a broad deep furrow continued for two-thirds the length of the rostrum and separated from its fellow by a narrow carina; ♀, a little more slender, slightly more curved and much more finely punctate, the angulated portion of the scrobe continued only as a narrow shallow stria to about the middle of the rostrum. *Antennae* with joint 2 of the funicle 1·7 times as long as 1, 3 distinctly longer than 4, the distal joints as long as or longer than broad, except 7 which is sometimes slightly transverse. *Prothorax* transverse (4 : 3), rounded at the sides, widest behind the middle, strongly constricted at the apex, the dorsal apical margin gently arcuate, fairly closely set with small granules, which are usually more or less transverse, and with a much abbreviated median carina. *Elytra* parallel-

sided from the shoulders to behind the middle, broadly and jointly rounded at the apex, without any apical process or tuft of setae, the shoulders not produced anteriorly but truncate at the base; the shallow striae containing very shallow punctures separated by granules, both punctures and granules becoming obsolete near the apex; the intervals broad, with somewhat irregular rows of granules which are usually not larger than those

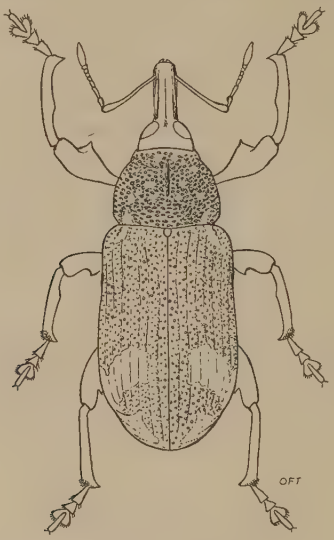

FIG. 2.—*Arnitticus bondari*, sp. n., ♂.

in the striae, int. 9 costate at the apex; in the general clothing the brown scales are small, curled and subrecumbent, and the pale scales are flat and usually slightly larger; the lunate marking is very variable in width and sometimes interrupted in the middle. *Legs* with the tibiae not sulcate.

Length 13–14 mm.; breadth 5·7–6·2 mm.

BRAZIL: Bahia, 4 ♂♂, 2 ♀♀, adults attacking leaves and fruit of cacao (*Dr. G. Bondar*).

Allied to *A. maculosus*, Boh., which differs in having the thoracic carina strongly developed and continued to the apical margin; joints 5–7 of the funicle are transverse; the ♂ has a tuft of setae on the suture close to the apex, and the furrow on the lower surface of the rostrum is not divided by a median carina.

Genus **Pantoteloides**, Hust.

This recently described genus (1932, *Faune Colon. Franç.*, **5**: 56) was placed in the subfamily BARIDINAE and the tribe Pantotelini. An examination of two specimens of the genotype, *P. variabilis*, Chev., kindly sent to the British Museum by Mr. Hustache makes it clear that the species cannot be retained in that subfamily, because the mesepimera are not ascending and the prosternum is extremely short in front of the contiguous coxae. Other characters that may be mentioned are the straight rostrum, dilated at the apex, where the antennae are inserted; the scape reaches the hind margin; the tibiae are curved towards the apex (especially the front pair), not compressed

or bisinuate internally but minutely denticulate, strongly uncinate and also mucronate.

The genus is not easy to place; in general it agrees well with the Erirrhininae, of which it has the facies, but it is excluded by the strongly uncinate tibiae. It seems better therefore to place it in the Hylobiinae, although the non-bisinuate tibiae and elongate scape are atypical characters.

Subfamily Anthonominae.

Lonchophorus ecuadorius, sp. n.

This species so much resembles in form, pattern and sculpture the common Brazilian *L. obliquus*, Chev. 1833, that the distinctions can best be shown in a comparative form :—

L. obliquus, Chev.	*L. ecuadorius*, sp.n.
Rostrum of ♂ nearly as long as the rest of the body (9 : 11 mm.), with the median carina obsolescent, and the antennae inserted behind the middle (four-ninths from the base).	Rostrum of ♂ about half the length of the body (6 : 11·5 mm.), with the median carina well marked, and the antennae inserted far beyond the middle (two-thirds from the base).
Rostrum of ♀ much longer (across the curve) than the body (19 : 12·5 mm.); antennae inserted at about one-fourth from the base.	Rostrum of ♀ as long as the body (12 mm.); antennae inserted at five-twelfths from the base.
Prothorax of ♀ nearly as long as broad and much more gradually narrowed in front than in ♂.	Prothorax of ♀ transverse, abruptly constricted in front, as in ♂.
Pygidium of ♂ much narrowed towards the apex; pygidium of ♀ not exposed.	Pygidium of ♂ suborbicular; that of ♀ broadly exposed.
Front tibiae gently sinuate on the dorsal edge, the ventral edge shallowly sinuate at the base.	Front tibiae straight on the dorsal edge, more deeply sinuate at the base beneath.

N.W. Ecuador: Pambilar, 60 ft., 5 ♂♂, 12 ♀♀ (*Rosenberg*).

Subfamily Cryptorrhynchinae.

Eubulus virgatulus, sp. n.

♂♀. Derm piceous, variegated above with dense brown, yellowish and black scaling; pronotum yellowish with a large transverse blackish patch in the middle of the basal half, and with three groups of erect black scales across the middle of the disk; elytra with intervals 1, 9, 10 mostly brown throughout, 2 brown to beyond the middle and yellowish behind, 4 and 8 entirely yellowish; 3 brown at the base, then with a black stripe ending before the middle, the remainder yellowish with a black spot or streak at the apex and usually another at the top of the declivity; 5 with a brown or blackish patch at the base, followed by a yellowish patch of equal length, the rest black more or less interrupted with pale scales; 6 brown except for a short yellowish streak at the base; 7 mainly pale with a few variable blackish spots; sternum with dense pale scales; venter with a few scales on ventrite 1, elsewhere with suberect spatulate setae.

Head not carinate above the eyes, which are distant; forehead distinctly narrower than the base of the rostrum, depressed in the middle. *Rostrum* rugosely punctate at the base, with only a median carina. *Antennae* inserted at (♀) or beyond (♂) the middle of the rostrum; joint 2 of the funicle shorter than 1. *Prothorax* transverse, parallel-

sided from the base to beyond the middle, there abruptly narrowed so as to form an obtuse lateral angulation; the sculpture entirely hidden by the large contiguous scales, which even cover the median carina except in the middle, where it is highest; a slight elevation on the disk mid-way between the median carina and the lateral angulation; in addition to the transverse row of three groups of erect spatulate black scales there are two groups at the apex, and narrower erect scales are scattered elsewhere. *Scutellum* elongate, ovate, bare. *Elytra* wider than the prothorax at the roundly rectangular shoulders, thence very gradually narrowing to behind the middle; the striae with shallow punctures each containing a narrow pale scale; the intervals convex and subcostate, except 2 which is flat near the base, and 7 and 9 which are subcarinate in the posterior half only; the erect setae broad and scale-like, especially the black ones. *Legs* mottled with dark and pale scales, the posterior pairs of femora often with a subapical pale band; femora bidentate; tibiae with the dorsal edge angulate near the base.

Length 3·2–4·0 mm.; breadth 1·8–2·0 mm.

Brazil: Bahia, 3 ♂♂, 3 ♀♀, 1930 (*Dr. G. Bondar*).

Closely related to the Central American *E. lineatulus*, Champ. 1905, which differs *inter alia* in having intervals 3, 5, 7, 9 of the elytra carinate throughout; the forehead is very nearly as broad as the base of the rostrum and not depressed in the middle; and the setae on the elytra are somewhat longer and much finer, almost hair-like.

Cnemidoprion, gen. nov.

Head narrowly visible from above; forehead much narrower than the base of the rostrum; eyes coarsely facetted, acuminate below and there widely separated. *Rostrum* dilated at the base, the mandibles bidentate and decussate. *Antennae* inserted beyond the middle of the rostrum; the funicle much longer than the scape, joint 1 shorter than 2; the club elongate, elliptical, unsegmented, clothed with dense long erect pubescence. *Prothorax* bisinuate at the base, the ocular lobes feeble. *Scutellum* free. *Elytra* wider than the prothorax, elongate, parallel-sided to the middle, constricted laterally before the apex, with stria 10 abbreviated. *Legs* short; femora only feebly clavate, not toothed, sulcate throughout on the lower face; tibiae shorter than the femora, straight on the inner edge, the dorsal edge strongly denticulate throughout, especially on the posterior pairs, the uncus less transverse than usual; tarsal claws free. *Sternum* with the mesosternal process horseshoe-shaped and quite open, not overhanging posteriorly; metasternum longer than a median coxa, metepisterna broad, strongly hamate in front. *Venter* with the three intermediate ventrites equal.

Genotype: *Cnemidoprion serratipes*, sp. n.

In Faust's arrangement of the Cryptorrhynchinae (1897) the species for which this new genus is proposed runs down to *Cryptorrhynchus*, but differs from it in the elongate second funicular joint, the coarsely facetted eyes, the simple femora, and especially in its externally serrate tibiae. The last-named character is extremely rare in the Curculionidae, and I know of no other instance in the present subfamily.

Cnemidoprion serratipes, sp. n.

♂♀. Dark piceous, with sparse grey scaling and short erect setae, the elytra with a few indefinite spots of slightly denser scaling.

Head with coarse reticulate punctures containing short suberect pale setae, but without scales; the forehead somewhat flattened and with no median fovea. *Rostrum* similar in the two sexes, short, stout, slightly curved, narrowing from the base to the middle then

widening again to the apex, deeply and coarsely punctate throughout, with an abbreviated median carina which is flattened and dilated in the middle, and a short oblique carina on each side of it. *Antennae* with joint 2 of the funicle 1·5 times as long as 1, 3–6 longer than broad, 7 as long as broad. *Prothorax* transverse, subparallel-sided in the basal half, then rapidly rounded to the apical constriction which is continued broadly across the disk, the dorsal apical margin strongly arcuate; the dorsum gently convex longitudinally, highest in the middle, with large reticulate punctures separated only by narrow carinae and with a much abbreviated broad median carina; set with short erect dark setae and three indefinite stripes of pale ones which are subrecumbent; pleurae punctured like the disk. *Scutellum* small, elongate, ovate. *Elytra* somewhat wider than the prothorax (8 : 6·5) and 2·5 times as long, roundly rectangular at the shoulders and jointly rounded at the apex; the striae containing deep oval separated punctures which diminish somewhat behind; the intervals scarcely wider than the striae, rugulose, 3, 5, 7, 9 subcarinate in the posterior two-thirds; the scales narrow, varying much in size and condensed here and there into small spots, a row of short erect setae on each interval. *Legs* rugosely punctate, with subrecumbent pale setae; the tibiae subcarinulate on the outer face and with 7 sharp teeth on the dorsal edge.

Length 4·2–5·5 mm.; breadth 2·0–2·5 mm.

Brazil: Bahia, 2 ♂♂, 6 ♀♀, bred from stem and roots of a malvaceous plant, 1925, 4 ♂♂, 6 ♀♀, bred from twigs of *Cienfugosia*, 1928 (*Dr. G. Bondar*).

Subfamily Baridinae.

Elliptobaris cocotis, sp. n.

♂♀. Piceous black, not very shiny, with short suberect setae; antennae and tarsi red-brown.

Head with rather strong close punctures and a deep frontal fovea. *Rostrum* of ♂ strongly curved near the base, reaching the metasternum, parallel-sided, with four deep punctate sulci (separated by carinae) reaching almost to the apex, but the outer sulci in the basal half ceasing at the middle and not continuous with the corresponding pair in the apical half, the median carina dilated beyond the middle then narrowing again; of ♀, gradually narrowed from the base to three-fourths and then slightly dilated, the basal sulci and carinae ceasing at the middle and represented on the apical half by rows of fine punctures with an additional fine punctate lateral stria. *Antennae* inserted at (♀) or beyond (♂) the middle of the rostrum; the funicle with joint 1 as long as 2 + 3 + 4, 3–7 transverse and slightly widening distally. *Prothorax* slightly broader than long, subconical, with the sides straight, broadest at the base and gradually narrowing to the apical tubulation, the lateral outline completely continuous with that of the elytra without any trace of a re-entrant angle at the junction; the dorsum feebly convex longitudinally, highest at the middle, set with strong separated punctures with a few smaller ones between them, the impunctate median line indefinite and abbreviated in front, each puncture bearing a short stiff suberect black or pale seta; the pleurae with larger punctures which are more or less confluent longitudinally. *Scutellum* free, trapezoidal, a little longer than broad. *Elytra* only slightly wider than the prothorax, widest at the very oblique shoulders and narrowing rather rapidly behind, rather flat dorsally, with sharply incised striae containing shallow distant punctures; the intervals broad and flat, each with a single row of punctures containing short stout suberect black or pale setae. *Legs* with coarse confluent punctures, making them appear carinulate; front coxae separated by two-thirds the width of a coxa. *Underside* strongly punctate and with short suberect white setae; the prosternal furrow broad and shallow, terminating anteriorly in a transverse fovea.

Length 3·5–4·5 mm.; breadth 1·7–2·1 mm.

Brazil: Bahia, 3 ♂♂, 7 ♀♀, in flowers of *Cocos coronata*, 1928 (*Dr. G. Bondar*).

The genotype, *E. setulosus*, Champ. 1908, from Panama, is a more convex and more shiny insect, and much more finely punctate; the prothorax is nearly parallel-sided in the basal half and much more abruptly tubulate in front; the femora are smooth, with sparse fine punctures, etc.

Subfamily Cossoninae.

Genus **Stenotylus,** gen. nov.

The species for which this genus is proposed belongs to an aberrant Scolytid-like group of Cossoninae including *Eurycorynes*, Woll., *Dendroctonomorphus*, Woll., *Brachytemnus*, Woll., *Stenoscelis*, Woll., *Hexarthrum*, Woll., *Elassoptes*, Horn, *Stereocorynes*, Woll., *Calyciforus*, Woll., and *Tomolips*, Woll. The species of this group are characterised by their very convex cylindrical form, short thick rostrum, flattened eyes, the close approximation of the anterior pairs of coxae, and especially by the fact that the mesosternum is well depressed below the level of the metasternum.

Head globular, with the eyes subdorsal, the space between them equal to the greater axis of the eye, the forehead only just visible above the upper margin of the eye in exact profile. *Rostrum* short and stout, about as long as broad, as wide in front as the head across the eyes, truncate at the apex; mandibles prominent, apparently not toothed; genae without any forwardly projecting process; scrobes very short (the antennae being inserted quite close to the base), subtriangular, bent down at a sharp right angle, and separated from the eye by a narrow ridge that is parallel with the margin of the eye; submentum scarcely pedunculate. *Antennae* with the scape very short and stout, about as long as an eye, widening from base to apex; funicle 5-jointed, joint 1 as long as 2 + 3 and only slightly thicker, 2–5 very transverse and closely attached; club strongly compressed, not wider than the funicle in either aspect, the basal joint bare and longer than the rest together. *Elytra* somewhat wider than the prothorax; stria 10 uniting with 9 before the middle. *Legs* without a trochanteral bristle; tibiae widening from base to apex, with a long uncus and a short sharp mucro; tarsi with the three basal joints short and broad, fitting closely together, 2 transverse, 3 subquadrate, as wide as 2 and not bilobate, 4 very slender. *Venter* with the intercoxal process narrow and arcuate.

Genotype: *Stenotylus mativorus*, sp. n.

From all the genera mentioned above (except *Tomolips*), *Stenotylus* differs in having only five joints to the funicle. *Tomolips* may be distinguished from it by its very broad subtriangular antennal club, the presence of the usual genal process, the subcylindrical prothorax, the asperate elytra, and the downwardly directed scrobe which is thus remote from the eye.

Stenotylus mativorus, sp. n. (Fig. 3.)

Black, bare; antennae, tibiae and tarsi piceous brown.

Head with strong even punctures, mostly separated by rather more than their own diameters; forehead somewhat flattened, with a very shallow median impression. *Rostrum* a little longer than the head, parallel-sided beyond the antennae and narrowed at the base, with a very shallow broad impunctate median impression, continuous with that on the forehead but not quite reaching the apex, the punctures elsewhere rather smaller and much closer than those on the head. *Prothorax* as long as broad, rounded laterally, widest behind the middle, more narrowed in front than behind, shallowly constricted at

the apex, which is gently arcuate, the base truncate; the dorsum longitudinally convex, highest near the base, with strong close separated punctures, which become denser on the pleurae, without any smooth median line. *Scutellum* small, round. *Elytra* subcylindrical, almost parallel-sided from the shoulders to two-thirds, nearly vertically declivous behind, jointly rounded at the apex, with the apical margin narrowly explanate, the base truncate;

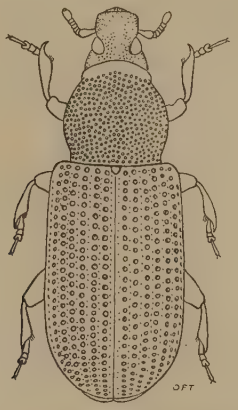

FIG. 3.—*Stenotylus mativorus*, sp. n.

the striae very shallow, containing large round separated punctures, which do not diminish behind; the intervals almost flat, as wide as the striae, each with a single, sometimes rather irregular row of small punctures, interval 9 with its upper edge narrowly carinate from before the middle to near the apex. *Legs* with very fine sparse punctures; the tarsal claws very small. *Underside* with small, widely spaced punctures.

Length 2·1–2·6 mm.; breadth 0·8–1·0 mm.

ARGENTINA: Misiones, four specimens from stumps of Yerba Maté (*Ilex paraguayensis*), 1931 (*Dr. A. A. Ogloblin*).

TWO NEW BEES OF THE GENUS *SCRAPTER* IN THE BRITISH MUSEUM

By T. D. A. COCKERELL, F.E.S.

Scrapter turneri, sp. n.

♀ (Type). Length 12 mm.; black, with a deep red tegumentary band at base of tergites 2 to 4, and the hind margin of fourth tergite pallid; eyes brown; face very broad, orbits a little converging below; head and thorax with dull whitish hair; broad deep facial foveae at each side of front, but they are not tomentose, they are close to orbit, but extend upward, away from orbit, to about level of lateral ocelli; clypeus strongly punctured, but shining, the punctures running more or less in grooves; upper part of supraclypeal region prominent; flagellum dusky reddish beneath; front and region about ocelli dull; mesothorax dull, very densely and rather strongly punctured, scutellum more shining and less densely punctured, slightly bi-gibbous; base of metathorax dull; tegulae

brown, subhyaline externally, dark at base; wings dilute reddish; stigma dusky reddish, not very large, nervures brown; lower section of basal nervure straight, falling well short of nervulus; second cubital cell very long, receiving recurrent nervures far from base and apex; legs black, with hair mostly pale, hind tibiae with dark fuscous hair behind; abdomen closely and very minutely punctured, the surface little shining; fifth tergite and apex with brownish-black hair; second sternite red, and third broadly red at apex, broadest in middle.

Cape Province: Montagu, Oct. 1924 (*R. E. Turner*). With these, Turner has associated some diverse-looking males, as follows:—

Male same size as female, the head and thorax above with long rufofulvous hair; flagellum longer, obscurely reddish or brown beneath; second and third sternites wholly clear bright red (Camps Bay, Sept. 1920).

Male much smaller (about 9 mm. long), slender, the abdomen with three red bands (Camps Bay) or four (Mossel Bay). The Mossel Bay one has sternites 2 to 4 clear red. The Camps Bay one has browner wings. These smaller males have narrower face than the large one, and hair of thorax above not so red. One Mossel Bay male has the red abdominal bands very obscure, and the flagellum is clear red beneath with the apex broadly darkened. There is also a large Mossel Bay male, similar to the Camps Bay one, with the red hair on thorax above. The male has the hair of face, cheeks and underside of thorax dull white. One naturally gets the impression that these diverse males include more than one species, but as the matter now stands, I am inclined to agree with Turner that there is a single very variable species.

Scrapter ornatipes, sp. n.

♀ (Type). Length about 12 mm.; black, with hind margins of tergites 2 to 4 narrowly pallid, ciliated with pale hair; the extreme base of third tergite may be more or less reddish; hair of head and thorax long and pale, with a fulvous tint, becoming bright ferruginous on scutellum; face broad; mandibles with a strong inner tooth; clypeus somewhat shining, especially the upper part, and with a median groove or depression; facial foveae broad and deep, the upper end somewhat angular; long hair of face and cheeks dull white; vertex shining; mesothorax and scutellum shining, sparsely punctured, median groove of mesothorax deep; tegulae dark, with a large red spot; wings not dark, but reddened, and more dusky apically; stigma clear rufofulvous; basal nervure falling short of nervulus; second cubital cell long, receiving recurrent nervures equally distant from base and apex; legs black, anterior tibiae with about the basal half bright red; hind femora and tibiae with light red hair beneath; abdomen highly polished, hardly punctured, hair at apex fuscous; venter dark, with pale reddish hair, forming a polleniferous scopa.

Male about 10 mm. long; face with very abundant long pale fulvous hair; flagellum black, very stout, not long; all the tibiae and tarsi, except last tarsal joint, orange, the tibiae flushed with red; evident slender thin hair-bands on tergites 2 to 5, these pale fulvous; venter all dark; stigma pale red, contrasting with the dark outer nervures; thorax highly polished above.

Natal: Van Reenen, Drakensberg (*R. E. Turner*).

Mr. Rowland E. Turner, some time ago, arranged the species of *Scrapter* (*Strandiella*) in the British Museum, most of the material having been collected by himself. He identified those which had been described, and set aside the others with blank labels. The two species described above were thus segregated. Another, represented by two dozen specimens from Mossel Bay, belongs to the recently (1932) described *S. semirufa*, Ckll.

In Friese's table (1924) *S. turneri* runs to *S. erubescens* (Friese), which has clear wings, and more red on the abdomen. It is known only from the male, and Friese thought it might be the male of *S. rufiventris* (Friese). *S. ornatipes* runs to the vicinity of the smaller *S. longula* (Friese). The following table shows how it may be separated :—

Abdomen red or brown . . . . . 1.
Abdomen mainly or wholly black . . . . . 3.

1. Abdomen broad, first three tergites bright chestnut red, the first with a large black area at base, the rest black; wings hyaline; stigma dark rufous, outer side of second cubital cell about as long as side on marginal; length about 11 mm. . . . . *rufiventris* (Friese).
   Abdomen slender, not red, but dark brown; apical part of wings distinctly brownish; stigma light red, contrasting with the dark nervures; outer side of second cubital cell much longer than side on marginal; length about 11 mm. . . . . *basutorum* (Ckll.).
   Smaller species, about 9 mm. long . . . . . 2.
2. Abdomen bright red, with not more than base and apex dark; wings dilute fuliginous . . . . . *semirufa*, Ckll.
   Abdomen with much more black; stigma dark . . *sphecodoides* (Friese).
3. Abdomen with red tegumentary bands on tergites 1 to 3 (♀) or 1 to 4 (♂) *turneri*, Ckll.
   Abdomen without such bands . . . . . 4.
4. Male; small species with clear hyaline wings; head extremely broad, transversely oval (Rapenburg; coll. and det. *Turner*) . . . *longula* (Friese).
   Wings dusky or brown . . . . . 5.
5. Stigma red . . . . . 6.
   Stigma brown, usually dark . . . . . 8.
6. Nervures pale reddish throughout; rather small species; wings pale, hardly at all dusky . . . . . *pallidipennis* (Ckll.).
   At least outer nervures dark brown . . . . . 7.
7. Smaller, wings greyish; face broad; basitarsi ferruginous *longula* (Friese) ♀.
   Larger, wings strongly reddened; scutellum with red hair; hind tibiae clear orange-red in male, black in female . . . . . *ornatipes*, Ckll.
8. Second recurrent nervure ending very close to outer intercubitus; wings extremely red . . . . . *ruficornis* (Ckll.).
   Second recurrent nervure ending more or less distant from outer intercubitus. . . . . 9.
9. Very small; abdomen with a pale hair-band in middle . . *pallidicincta*, Ckll.
   Abdomen not thus banded, shining, quite without bands . *glaberrima* (Friese).

A CORRECTION.

Dr. K. M. Heller, of Dresden, informs us that he has now discovered that *Ischiopsopha superba* described in the last number of *Stylops* (1933, **2**: 48) is identical with *I. bennigseni*, Möser (1906, *Ann. Soc. ent. Belg.*, **50**: 396, and 1913, *Deuts. ent. Z.*, **1913**: 169, pl. 2, figs. 4–6).

BESCHREIBUNGEN VON ZWEI NEUEN *CIS*-ARTEN (COL.) AUS OSTASIEN

Von Jan Roubal.

Cis erinaceus, sp. n.

Eine auffallende Art aus der Gruppe des *Cis boleti, setiger* und *nigrorugosus*, Schil. Klein, kurz, gedrungen, stark gewölbt, hellrotbraun, die Extremitäten gelblichbraun. Der Kopf dicht punktiert, matt, die Clipeusränder aufgehoben, vorne fast nicht ausgerandet. Der Halsschild verhältnissmässig länger als bei dem *C. setiger*, seine Seiten mehr gerundet, die Seitenränder schmäler als bei dem letzteren und unbewimpert. Die Vorderecken ragen stumfeckig vor. Die Oberfläche des Halsschildes wie bei den verwandten Arten gebildet, ihre Punktierung etwas sparsamer punktiert als bei dem *C. setiger*, die Zwischenräume der Punkte glatt und glänzend, die Börstchen ziemlich lang und schief abstehend. Die Flügeldecken gleichmässig stark gewölbt, vorne gar nicht eingedrückt, glänzend, stark, grob, dicht, hie und da runzelig, punktiert, dazwischen kleinere Pünktchen, die Borsten weiss, viel länger als bei den erwähnten Arten, jedes Börstchen gegen die Spitze stark verdünnt und scharfspitzig; diese Beborstung ist abstehend und etwas weniger dicht als bei den verglichenen Arten.

Auf den ersten Blick weicht die neue Art von den drei angegebenen Verwandten ab: durch die kurze, gewölbte Gestalt, den nicht ausgerandeten Clipeus, durch die Form, Ränder und Struktur des Halsschildes, durch die Beborstung der Flügeldecken.

Long. 2 mm.

Vladivostok (*Herrmann Frieb*).

Cis friebi, sp. n.

Diese Art gehört etwa in die Nähe des *C. sibiricus*, Schil., den ich nur der Beschreibung nach kenne und der vielleicht nicht ganz genau beschrieben ist. Kurz, gedrungen, stark gewölbt, bräunlich schwarz, die Fühler und der Mund gelb, die Füsse dunkler gelb matt. Der Kopf eben, stark punktiert, die Stirn fast senkrecht. Der Halsschild seitlich in der Mitte parallel, das vordere Viertel nach vorne gerundet verengt und die Vorderecken etwas stumpf und kurz nach vorne vorstehend, die Hinterecken breit abgestumpft; die schmal abgesetzten Ränder schwach bewimpert, die Basis jederseits breit sanftgebuchtet. Die Oberfläche mit grossen, flachen, nicht sehr tiefen, gleichen Punkten dicht bedeckt, ihre Zwischenräume sehr schmal, glatt. Von einer Mittellinie ist kaum eine äusserst schwache Spur vor dem Schildchen angedeutet.

Die Flügeldecken etwas mehr als zweimal so lang wie der Halsschild und etwa zweimal so lang wie breit, jede einzelne Decke an der Spitze etwas verlängert und stumpf zugespitzt; ihre Punktur ist keineswegs in Reihen gestellt, sie besteht aus grossen, runden, hie und da netzartig zusammenfliessenden, nur sehr schwache Runzeln bildenden Punkten, zwischen denen sich die kleinen befinden. Die Zwischenräume sind glänzend. Die Börstchen sind weiss, ziemlich lang, nicht dick, verhältnissmässig viel dünner als bei dem *C. micans*, jedes zugespitzt; sie stehen stark ab. Von der Punktur des *C. sibiricus* sagt der Autor, 1900, *Käf. Europa's*, 37 : 75 : " Auf den Flügeldecken ungleich stark, die grösseren Punkte sind nur gegen die Seiten zu deutlich, der Rücken dagegen ist gleichmässig fein punktiert." Hiedurch ist die neue Art von dem *C. sibiricus* absolut abweichend. Gleichfalls ist die Beborstung der Flügeldecken, etc., ganz anders. Habituell steht der *C. friebi* etwa dem *C. lederi* nahe.

Long. 2 mm.

Vladivostok (*Herrmann Frieb*) dem zur Ehre freundschaftlichst gewidmet.

REMARKS ON *SMICROMYRME PUSILLA* (KLUG) (HYM. MUTILLIDAE)

By Dr. H. Bischoff.

The female of this Mutillid belongs to a group of very similarly marked species some of which are difficult to distinguish—so much so indeed that André's table in *Spec. Hymenopt. Europ. Alg.*, 1899, does not enable us to separate them. The table also contains several errors which on this occasion, as the result of the examination of the type (Klug, 1835, in Waltl, *Reise Tyrol*, II, p. 92) from Puertoreal (Mus. Berlin), may be corrected.

Neither in the type, nor in any other examples of this species lying before me, is the pronotum coloured black anteriorly. Specimens which André mistook for *pusilla* belong to other species.

The female can always be recognised easily by the barrel-like elongated shape of the second abdominal segment which is unlike that of any other species of *Smicromyrme* with which I am acquainted. The markings of the abdomen are those characteristic of the *rufipes* group. The lateral spots of the second segment are generally distinct, but may be absent. The metapleura are, below, sparingly and coarsely punctured, above only slightly so, and to a great extent quite smooth. The thorax is comparatively short, the so-called scutellar scale small and indistinct. The pygidial area exhibits some variation in its sculpture. In the type it is on the whole shining, with weak longitudinal striae upon the basal three-fourths; the apex free from them and therefore shining all the more strongly. The striation may sometimes be more elliptical, but always leaves the apex of the pygidial area free, although sometimes to a lesser extent than in the type. In some examples the pygidial area is less brilliant on the whole.

André described in 1899 as the male of *pusilla* an insect which he identified on the strength of several characters in common with those of *S. viduata*, Pall. He had received this ♂ from Bonifacio, together with ♀♀ which he considered to be those of *pusilla*, but whether it actually was this species, remains uncertain. In any case Mellor's breeding experiments show that the true male of *pusilla* has nothing to do with the male which André described as such. The latter is very probably the ♂ of *S. perrisi*, Sich. Rad.

The *pusilla* ♂ in its general appearance reminds one strongly of small specimens of *montana*, Pz., but it is not quite so stout, although at the same time not nearly so slender as *rufipes*, F. The fact that it lacks a tooth on the lower edge of the mandible brings it near to the ♂ described by Radoszkowsky as *subcomata*, from which, however, it is easily separated by a number of characters. The body is black; on the thorax the following parts are red: pronotum, mesoscutum, and scutellum, the tegulae, metanotum and the upper portions of the mesopleura. The red colour of the sides of the thorax may, however, spread further and extend over the metapleura and the sides of the median segment which is otherwise black. The pale pilose fringes of the first three abdominal segments are thicker than those of the others.

The head is transverse, and as viewed from above not narrowed behind the eyes; the cheeks are well formed; the posterior edge of the temples runs parallel with the external orbits, and the temples are therefore not narrower below where they join the cheeks, than they are above; the ocelli are small (about as in *rufipes*, F.); the antennae are relatively short, and their median joints only $1\frac{1}{2}$ times as long as broad; their second flagellar joint is much shortened; the keel of the clypeus is present only between the bases of the

antennae, and from this point the clypeus is continued forwards, flat and without arching in the middle line. The thorax is stout; the tegulae are only very sparingly punctured; the median segment is short, with strong and uniform areolation, without an elongated median field. The venation of the wings is normal and there is no thickening of the veins as in the ♂ of *subcomata*. The abdomen is very coarsely and deeply punctured, as also is the centre of the second tergite.

Of the 3 ♂♂ lying before me I take as allotype the bred example * from Cyprus : Troodos, vii.29 (Hope Coll., Univ. Mus. Oxford), and as paratypes the remaining males from Bulgaria : St. Zagora, vii.07 (Museum Berlin), and Cyprus : Limassol 13.vii.31 (coll. Mavromoustakis).

DESCRIPTION D'UNE NOUVELLE ESPÈCE DU GENRE *CHLORIDOLUM*, J. THOMS. (COL., CERAMBYCIDAE)

Par N. N. Plavilstshikov.

(*Moscow.*)

Chloridolum heyrovskyi, sp. n.

Capite cyaneo, vertice violaceo; pronoto cyaneo-violaceo; elytris obscure-violaceis, basi apiceque et pro parte lateribus obscure-viridis; sterno abdomineque viridis, prosterno cyaneo-viride; antennis violaceis, in dimidio apicali nigricante-violaceis; femoribus anticis mediisque obscure-rubris, apice breve violaceis, femoribus posticis obscure-violaceis, in triente basali obscure-rufis, tibiis nigricante-violaceis, tarsis subnigris, meso- et meta-sterno abdomineque subtiliter argenteo-griseo pubescentibus. Fronte in dimidio basali longitudinaliter ruguloso, interstitiis disperse punctatis, vertice irregulariter longitudinaliter ruguloso. Antennis in mas corpore in 1·5 longioribus, articulo 1° apice breve indistincte producto, breve et indistincte longitudinaliter sulcato, grosse irregulariterque foveolato-punctato. Prothorace tuberculo laterali modice evoluto, ante apicem lateraliter producto, ante basin et post apicem late et non profunde constricto; disco intuberculato, basi et apice regulariter transversim plicato; disco in dimidio basali regulariter transversim plicato, in dimidio apicali plicis concentrico dispositis ornato. Elytris dense subtiliterque punctatis, opacis, prope scutellum subrugulosis, subnitidis. Scutello late et profunde longitudinaliter sulcato, disperse punctato, nitido. Prosterno dense subtiliterque rugulosо-punctato, mesq- et meta-sterno abdomineque dense subtillissime punctulatis. Abdomine in mas segmento 5° apice emarginato. Femoribus posticis apice elytrorum multo superantibus (mas).

Long. corp. 23–25 mm., lat. ad hum. 5–5·2 mm.

Habitat. Tonkin : Chapa (*J. Clermont* leg., coll. mea).

Amico meo Dr. Leo Heyrovsky, cerambycidologo meritissimo, dedicatum.

Voisin de *C. perlaetum*, White (1853), en diffère par le premier article des antennes densement creusé, pronotum, orné de plis concentriques dans sa partie antérieure, prosternum non strié transversalement mais finement et densement ruguleusement ponctué.

Tête bleue, vertex violacé, pronotum d'un bleu violacé, modérément brillant; élytres d'un violacé obscur, sur sa base, près du sommet et latéralement plus ou moins d'un verdâtre obscur; dessous du corps vert avec le prosternum d'un vert bleuâtre, antennes d'un bleu noirâtre ou d'un violacé obscur, fémurs anté-

* See J. E. M. Mellor in 1932, *Proc. Ent. Soc. Lond.*, **7** : 62.

rieurs et médianes d'un rouge obscur, brievement violacés sur le sommet, fémurs postérieurs violacés, d'un rouge obscur ou brunâtre dans son tiers basal, tibias d'un violacé obscur, tarses presque noirs; dessous du corps avec une fine pubescence d'un gris argenté. Front rugueux longuement dans sa partie basale, avec les interstices éparsement ponctués, vertex irrégulièrement rugueux, les rides disposées plus ou moins longuement. Antennes chez le mâle en 1·5 fois plus longues que le corps; 1er article très brièvement prolongé au sommet, sans une dent distincte, avec un sillon longitudinal, très court et peu distinct, irrégulièrement creusé et très rudement ponctué. Pronotum avec une tubercule latérale, courtement tuberculé latéralement près du sommet, largement mais non profondement constricté vers la base et près du sommet, régulièrement plié transversalement vers sa base, près du sommet et dans la partie basale du disque, dans la partie apicale du disque les plis sont disposés dans deux groupes concentriques, divisés par quelques plis longitudinals. Elytres densement et finement ponctués, opaques, un peu brillants près de l'écusson ou ils sont plus rudement sculptés. Ecusson largement et profondement sillonné, dispersement ponctué, brillant. Prosternum finement et densement, ruguleusement ponctué, méso- et méta-sternum finement et densement ponctués, l'abdomen finement et densement ponctué, avec quelques points plus rudes. Premier article des tarses postérieurs aussi long que les autres articles réunis. Fémurs postérieurs chez le mâle beaucoup plus longs, chez la femelle un peu plus longs que les élytres.

Appartient à le groupe des espèces avec le pronotum sans tubercules et sans macules (plus densement et plus finement sculptées, garni d'un toment dense et autrement colorées) sur le disque. On peut distinguer cette espèce d'après la tabelle suivante :—

1(8). Pronotum transversalement plié sur son disque, sans macules du toment dense ou espacés plus finement et plus densement sculptés.
2(5). Pronotum avec des tubercules, grandes et très distinctes, sur son disque.
3(4). Pronotum avez tubercules discales très fortes, profondement mais brièvement sillonné transversalement entre les tubercules prébasales et préapicales, les plis transversales plus fins et moins regulièrement disposés . . . . . *Ch. sieversi*, Ganglb., 1886.
4(3). Pronotum avec deux tubercules discales (prébasales), tubercules préapicales très petites, plus ou moins indistinctes; les plis plus rudes, très régulièrement disposés transversalement *Ch. nympha*, White, 1853.
5(2). Pronotum sans tubercules discales ou avec de tubercules très indistinctes, finement et densement plié transversalement.
6(7). Premier article des antennes assez rudement mais pas densement ponctué. Pronotum très régulièrement plié transversalement. Prosternum chez le mâle et chez la femelle très finement et régulièrement strié transversalement. Front irrégulièrement rugueux *Ch. perlaetum*, White, 1853.
7(6). Premier article des antennes très rudement ponctué et fortement creusé. Pronotum plié transversalement dans sa partie basale, dans sa partie apicale les plis sont disposés par les deux groupes concentriques. Prosternum finement et densement ruguleusement ponctué *Ch. heyrovskyi*, Plav., 1933.
8(1). Pronotum avec une macule médiane ou deux latérales, composées de la sculpture plus fine et dense et ordinairement densement veloutées *Ch. bivittatum*, White, *orientale*, Guèr. *alcmene*, J. Thoms., et les autres.

NOTES ON SOME MALAYAN XYLOCOPIDAE (HYM.)

By H. T. Pagden, M.A., F.E.S.

For some time there appears to have been a certain amount of doubt concerning the identity of *Mesotrichia grubaueri* (Friese), and it is hoped that the following notes may aid in clearing up the matter.

On the last two days of January 1930 I captured eight males of a Xylocopid at between 3300 and 3500 ft. on Bukit-Kutu, Sĕlangor. My friend Mr. H. M. Pendlebury of the Selangor Museum, Kuala Lumpur, F.M.S., told me that he had two names which had been given to the species, *Mesotrichia malayana* (Cam.) 1901 and *M. sarawakensis* (Cam.) 1903, but he believed that the name *malayana*, by which the species appeared to be generally known, was invalid and probably a synonym of *flavo-nigrescens*, Smith, 1854.

In October 1929 Mr. N. C. E. Miller, of the Department of Agriculture, Kuala Lumpur, had given me two males and two females of a Xylocopid of the *Cyaneoderes* group, superficially resembling *coerulea*, F., but distinguished in the male by the size of the eyes, position of the ocelli, genitalia and the reduction of the lamellate expansion at the apex of the hind tibiae, and in the female by the strongly striate maxillae. These insects all came from a single nest in a log on Fraser's Hill 4.x.1921 at an altitude of about 4000 ft.

A pair was given to the F.M.S. Museum, and the name received was *grubaueri*, Friese, a previous specimen, a female, having been identified as this species from comparison with named material in the British Museum.

In May 1932 I visited the Zoologisches Museum der Universität in Berlin, where I was able, through the kindness of Professor H. Bischoff, to examine the type specimen of Friese's *grubaueri*. Although I had not got my specimens with me, I immediately realised that this insect was identical with the species referred to above as *malayana*, Cameron. On my return to England I forwarded two of my specimens to Professor Bischoff with a request that he would check this supposition, which proved to be correct. I also sent my pair of insects which had been named as *grubaueri*, and Professor Bischoff identified these as *dormeyeri*, Enderlein 1908.

With regard to the validity of the name *malayana*, which antedates both *grubaueri* and *sarawakensis*, Meade-Waldo (1914, *Ann. Mag. Nat. Hist.* (8), **16 :** 454), published this as a synonym of *X. flavo-nigrescens*, Smith (1854) and there is a note to the same effect in his MSS. catalogue of the Xylocopidae, now in the British Museum. Cockerell mentions this synonymy in 1918, *Entomologist*, **51 :** 104. Subsequently, under *Xylocopa* (*Koptorthosoma*) *coerulea* var. *viridis*, M.-W. (1916, *Ann. Mag. Nat. Hist.* (8), **17 :** 465), Meade-Waldo states that *X. malayana* is the same as *X. sarawakensis*.

Dover (1929, *Bull. Raffles Mus., Singapore*, **2 :** 61) under *X. malayana*, Cameron, mentions the above papers of Meade-Waldo and Cockerell, and suggests that both *malayana* and *sarawakensis* are really synonyms of *flavo-nigrescens*. The species to which he refers is actually *grubaueri*, as his brief description indicates, and the specimens with which he was dealing have been examined by me.

An examination of Cameron's type of *malayana* and of his original description clearly shows that this species is identical with *flavo-nigrescens*, Smith, a yellowish species, and not with *grubaueri*, Friese, which is a bluish and olive-green species. The type of *sarawakensis*, Cameron, is identical with Friese's *grubaueri*, and the descriptions agree.

The synonymy is therefore as follows :—

Mesotrichia (*Xylocopa*) *grubaueri*, Friese.

Xylocopa grubaueri, Friese (1903), May 1903, Z. Hymenopt. Dipterol., **3**: 205. (Stamped as received in British Museum 28th April, 1903.)
Xylocopa malayana, auctt., *nec* Cameron (7.v.1901), Proc. Zool. Soc., **1901**: 32, *nec malayana*, Meade-Waldo, 1916, Ann. Mag. Nat. Hist. (8), **17**: 465.
Xylocopa sarawakensis, Cameron (June 1903). 1903, J. Str. Br. R. Asiat. Soc., **39**: 180.

Mesotrichia (*Xylocopa*) *flavo-nigrescens*, Smith.

Xylocopa flavo-nigrescens, Smith (1854) 1854, Cat. Hymenopt. Ins. in Coll. Brit. Mus., **2**: 354–5.
Xylocopa malayana, Cameron (1901), Proc. Zool. Soc., **1901**: 32, *nec X. malayana* auctt.

The female of *M. grubaueri* is at present unknown, but the habits of the male are remarkable and worthy of comment.

The two best-known localities in Malaya are Bukit Kutu, 3485 ft., Sĕlangor, and Gunong Jĕrai, 3978 ft. in Kĕdah (also known as Kĕdah Peak). I have taken the insect freely on both these hills in January and April 1930 and December 1931. The type specimen is labelled "Malakah, Perak 1902," and may have come from Gunong Kĕledang near Ipoh. Pendlebury has taken it on Bukit Kutu, Gunong Angsi in Nĕgri Sĕmbilan, Gunong Kĕledang in Perak, Gunong Jĕrai, and Taiping Hills in Perak. The species is also recorded from Matang, Sarawak.

Males may usually be seen on Bukit Kutu and Gunong Jĕrai on any sunny morning between 9 a.m. and 11 a.m. On Bukit Kutu they do not appear to go far below the bungalows, and may be found to within a few feet of the bare rock at the summit; on Gunong Jĕrai I have not found them below 3400 ft., but they occur above that point right up to the trigonometrical mark on the summit.

Attention is first drawn to them by their loud buzzing, which is deep and of a peculiar timbre, quite unlike that of any other bee I have observed, and once heard is quite unmistakable. Each male appears to select a particular point, a gap in the foliage, a certain leaf or twig, or some quite indefinite point to which it is attracted for no apparent reason. Here it hovers, almost motionless except for its wings, emitting its deep hum. Every now and then one of the insects leaves its post and violently attacks a neighbouring one, the two combatants sometimes clutching each other and falling, but usually separating before they reach the ground. As far as my observations go, it is always the aggressor who is put to flight, and returns to his original beat. During these encounters the hum rises in crescendo to a shrill scream.

Owing to their wariness, I have not found it practicable to capture and mark specimens to see whether the attacking party is always the loser in these encounters, so I have had to rely on observing specimens which could be distinguished by their size or state of wear. The fact that both beats are occupied immediately after an encounter is significant. A specimen once captured and liberated usually makes off and does not return.

Although I have seen these insects resting on a leaf or twig and apparently sunning themselves, this appears to be unusual, the majority remaining on the wing during the whole of their visit to the mountain.

That the points selected have some definite attraction for the insects is suggested by the fact that when I have captured and killed specimens, their beat is nearly always occupied by a fresh example on the following morning. The beats selected are usually several yards apart, so that, in the vast space at their disposal, this selection can hardly be fortuitous.

It seems probable, and Mr. Pendlebury agrees with me, that the female will prove to be a low jungle insect. The males are only on the hills for about two hours in the morning, when they all disappear in a few minutes. On Bukit Kutu, where the conditions for observations are admirable, the vegetation near the summit being comparatively low and the sides of the hill steep, giving a clear, uninterrupted view, I observed the departure of several specimens and noted that all of them seemed to fly towards a point in the valley to the South. I only observed the departure of single specimens, however, and, as this was rather unsatisfactory, I collected a number of specimens and kept them in boxes until well after their normal time of departure, when I liberated them all together. After several wild circles they made off *en masse* in the same direction as had been indicated by the single specimens observed previously and on a fairly steep incline downwards. I was able to follow them for a considerable distance with the aid of field-glasses, and my conclusion was that they were making for a definite point in the jungle some 3000 ft. below. I believe that this is where the females must be sought, but, as opportunities for such work are rare, it will probably be some time before any search is made.

Mesotrichia dormeyeri (Enderlein).

This species belongs to the *Cyaneoderes* group. It is superficially very like *coerulea*, F., but appears to be generally smaller and to be entirely montane.

My specimens, a male and female, were identified by Professor Bischoff, who wrote to me to say that the male which Enderlein attributed to this species was not the right one, as it has not got two cubital cells. He continued, "Das Männchen, welches Enderlein dazu stellt, hat aber mit dieser Art nichts zu tun; Ihr Männchen ist das richtige."

My specimens, two males and two females, a pair of which was given to the Sĕlangor Museum, Kuala Lumpur, were taken by Miller 4.x.1929, nesting in a log on Fraser's Hill at about 4000 ft. A pair in the British Museum (Nat. Hist.), until recently labelled as *grubaueri*, was taken by H. C. Robinson on Bukit Kutu, 1905.

The most obvious characters which distinguish *dormeyeri*, Enderlein from *coerulea*, F. are as follows.

Males.

Pubescence of face mainly golden and griseous, eyes very large, strongly convex and prominent, lateral ocelli very near to eyes. Apex of posterior tibiae, inwardly, armed with a large, curved, lamellate process. A dense tuft of golden pubescence between the anterior coxae . . . *coerulea*, F.

Pubescence of face mainly bluish-green, eyes moderately small and not very prominent, lateral ocelli only slightly farther apart than their distance from the eyes. Posterior tibiae with a small, curved, lamellate expansion inwardly at the apex. Pubescence between anterior coxae more griseous *dormeyeri*, Enderlein.

Females.

Segments 3–11 of flagellum of antennae pubescent; a distinct transverse ridge, slightly polished, at the fronto-clypeal junction, the median tooth-like production of the anterior margin of the labium long, its sides parallel. Inner tooth of mandible acute. Maxillae with only three or four weak striae between the two main carinae, the whole maxilla polished and shining, with a few scattered punctures, the striae not extending more than $\frac{1}{2}$ . . . . . *coerulea*, F.

Segments 3–11 of flagellum less pubescent, but 3 and 4 nearly as pubescent as in *coerulea*. Fronto-clypeal ridge indistinct and largely covered with blue pubescence, almost obsolete beneath this. Median projection of labium shorter, sub-acute and with the sides converging to the apex. Inner tooth of mandible blunt. Maxillae strongly longitudinally striate, the striae extending from the base for $\frac{2}{3}$, their ridges carinate. Striae numerous and easily visible to the naked eye, giving the maxilla a dull appearance except apically . . . . . *dorneyeri*, Enderlein.

Mesotrichia flavo-nigrescens (Sm.).

This species was described by Smith in 1854, *Cat. Hymenopt. Ins. in Coll. Brit. Mus.*, **2**, Apidae : 354–5. The type is the male. Locality Silhet.

In 1901 Cameron, in 7.v.1901, *Proc. Zool. Soc.*, **1901** : 32, described *Xylocopa malayana*, also a male and the same species as Smith's *flavo-nigrescens*. Locality Singapore.

The descriptions do not agree exactly; Smith states that the fringe on the anterior and intermediate tarsi is black in front, Cameron that it is white. Actually, the types show that there is an admixture of both, black being dominant at the base and white on the claw joint. My own specimens have the white predominating except on the metatarsus, where the hairs are piceous to black beneath, longer and whitish above, the dark hairs showing through, especially on the intermediate legs, and giving a dusky appearance. Both authors have omitted mention of the white, slightly lemon tinted, wedge of hairs in the middle of the anal fringe of black hairs, in their descriptions, but Smith, in his Monograph in 1874, *Trans. Ent. Soc. Lond.*, **1874** : 277, mentions this character. In Cameron's specimens, two both labelled "type," the retracted condition of the abdomen partially obscures it, but it is quite definitely present. The narrow line of bright yellow pubescence at the base of abdominal segments two to five, mentioned by Smith, can only be seen when the abdomen is fully extended.

One of Cameron's specimens has an entirely black face, the other has a yellow line down the middle of the clypeus.

Variable characters appear to be the relative amounts of black or white hairs on the tarsal fringes, the extent of the yellow markings on the face when these are present (one of my specimens has the base of the frons and the antero-lateral angles of the clypeus flavous, as well as the median mark) and the colour of the lower surface of the antennae. These range from entirely ferruginous or reddish ochreous to entirely black on the scape and four basal segments of the flagellum.

I have not been able to trace any published description of the female. Meade-Waldo (1913) mentions a female captured by him in Borneo, and says that this is the first record of the female *X. malayana*, Cameron, by which he meant *Mesotrichia grubaueri* (Friese), the female of which is still unknown. He corrects this error (1916, *Ann. Mag. Nat. Hist.* (8), **17** : 465) and explains that the specimen captured by him was a new variety of *Cyaneoderes coerulea* (F.), and named var. *viridis*, M.-W. His specimen was in no way connected with Smith's *flavo-nigrescens*. Cockerell (1918) mentions a female captured by Baker in Penang Island and comments on the synonymy of *malayana* and *flavo-nigrescens*.

The first female which I captured and knew to be this species was found at Sungai Dĕrhaka, Province Wellesley, Straits Settlements on November 12, 1931. Seeing a male *flavo-nigrescens* enter a hole in a rotten stump, I imme-

diately plugged the hole and removed the whole stump, taking it home with me. On opening the nest I found a male and female inside, and at first supposed the female to be *M. confusa viridissima*, Ckll., which it closely resembled. The only differences visible to the naked eye were the apparently darker facial pubescence and a line of yellow pubescence on the first abdominal tergite. Subsequent examination of my material of *confusa viridissima* and of that in the Selangor Museum revealed a number of females having these characters. Later in the same year I captured another four females on Gunong Jĕrai at between 3400 and 3900 ft., December 30 and 31, 1931. On my return to England I found more of these specimens under *Xylocopa aestuans*, L., in the British Museum.

A more detailed examination showed that these specimens were distinct structurally from *confusa viridissima*. The best character is a deep groove along the posterior margin of the eye from a point about $\frac{3}{10}$ from the base of the eye to its apex. The three tubercles on the labium of *flavo-nigrescens* are not

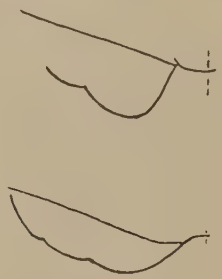

Fig. 1.—Right half of margin of labrum of *confusa* above, and *flavo-nigrescens* below.

as prominent as in *confusa* and the median one is narrower. The depressed margin is more gradually curved from the lateral angle to the median emargination, which is shallower than in *confusa*. The puncturation on the vertex round the ocelli appears to be coarser and more dense in the interocellar space than in *confusa*, but this seems to be a variable character within the species, and is probably not reliable.

The species has a fairly wide range in the Malay Peninsula and appears to extend from sea level to about 4000 ft. My own specimens have been taken in the following localities : Sĕpang, Sĕlangor, 20.i.28 ♀, Kuala Lumpur 5.iv.29 ♂, Bukit Panchor, Kĕdah 21.ii.30 ♀, Sungai Dĕrhaka, Province Wellesley 12.xi.31 ♂♀, Gunong Jĕrai, Kedah 30.xii.31 ♀, 31.xii.31 3 ♀♀.

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Meade-Waldo, G., 1913, J. Sarawak Mus., **1** : (3), 22 (*X. malayana*, Cam. ♀).
——, 1914, Ann. Mag. Nat. Hist. (8), **16** : 454 (*X. malayana*, Cam. = *X. flavo-nigrescens*, Sm.).
——, 1916, Ann. Mag. Nat. Hist. (8), **17** : 465 (*X. coerulea* var. *viridis*, M.-W. and *X. sarawakensis* = *X. malayana*, Cam.).
Smith, F., 1854, Cat. Hymenopt. Ins. in Coll. Brit. Mus. **2** : 354–5 (*X. flavo-nigrescens* ♂).
——, 1874, Trans. Ent. Soc. Lond., **1874** : 277 (*X. flavo-nigrescens*, Sm. ♂).

THE EARLY STAGES OF TWO INDIAN WEEVILS (COL., CURCULIONIDAE)

By J. C. M. Gardner, I.F.S., F.E.S.

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The two species *Peribleptus scalptus* and *Paepalosomus dealbatus*, the early stages of which are now described, belong to the tribe Paepalosomini, subfamily Hylobiinae. The most striking feature of the larva is the possession of a strongly sclerotised caudal plate, an adaptation to a stem mining habit the precise significance of which I have not yet determined. The pupa also has a remarkable caudal armature. While, with our present knowledge, these structures appear to be peculiar to the early stages of these two genera and probably of all four genera of the tribe, it is possible that some modification of the kind may be found in other and not closely related stem-boring genera. In this connection it is interesting to note that an unknown larva of the family Ostomidae, taken from the same stems as larvae of *Peribleptus*, has a very similar rigid posterior plate.

Characters common to larvae of *Peribleptus* and *Paepalosomus*.

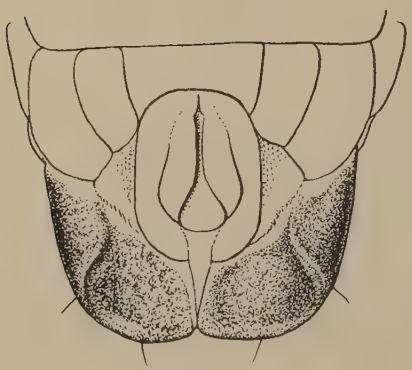
Larva elongate cylindrical, with a rigid flattened caudal plate. Body setae minute for the most part. Head relatively small, about as long as wide, with distinct frontal and epicranial sutures. Ocelli two on each side, those of each pair well separated. Epipharynx with four stout setae medially. Mandible with two strong apical teeth and a smaller tooth nearer middle. Maxillary and labial palps short and stout, two segmented. Prothoracic tergum with a shining transverse testaceous plate; the three following terga each with a distinct lenticular prescutum. A typical abdominal tergum with a very narrow transverse subdivision near the middle. The intersegmental skin and the poststernellum are distinct. Hypopleurum not divided. Spiracles nearly circular, biforous, the spiracular opening circular; the two "air-tubes" somewhat irregularly subdivided, not projecting far beyond peritreme; the posterior pair of spiracles larger than the others, dorsally situated on the caudal plate. Borers in green stems of Urticaceae, tribe Urticeae.

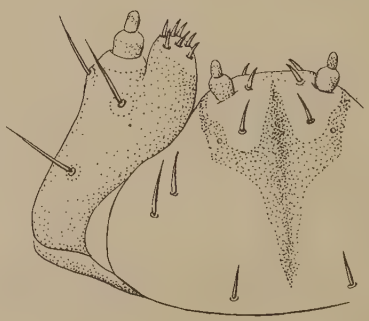
Peribleptus scalptus, Boh.

Larvae were extracted from green stems of *Girardinia heterophylla* (Urticaceae), September 1929, Darjeeling (*J.C.M.G.*); beetles were subsequently reared.

Larva. (Figs. 1–6.)

Length of mature larva about 20 mm., width about 3·5 mm.; width of head 1·9 mm. Body weakly curved, cylindrical, slightly enlarged posteriorly. White, with head and caudal plate brown, prothorax with a transverse testaceous brown plate above. Setae mostly





FIGS. 1–6.—Larva of *Peribleptus scalptus*, Boh.

Fig. 1, Lateral view; Fig. 2, Caudal plate in dorsal view: *sp*, posterior spiracles; Fig. 3, Ventral view of caudal segments; Fig. 4, Ventral mouth-parts; Fig. 5, Thoracic spiracle; Fig. 6, Mandible.

minute except on sclerotised areas. Skin minutely shagreened on ventral surface and in small patches above.

Head capsule about as wide as long, broadly rounded posteriorly, the sides almost straight and weakly converging anteriorly. Epicranial and frontal sutures distinct. Ocelli two on each side, each distinct and with a black pigment spot; one is next to the antenna, the second posterior and well separated from the first. Antenna rudimentary, each consisting of a circular basal cushion bearing two appendages, one larger and one smaller, and each longer than wide. Labrum strongly transverse, the anterior margin slightly curved; the disc with a pair of setae between the partly visible epipharyngeal rods and with two setae on each side; on the median part of the extreme anterior margin are four stout and two very small setae; the labrum is continued posteriorly into a median brown sclerotisation. Clypeus posteriorly brownish and with a pair of small setae on each side. Epipharnyx with two pairs of short stout setae between the oblique epipharyngeal rods; near the anterior margin, lateral to the rods, are five setae. Mandible (fig. 6) with two strong apical teeth, the upper margin of the inner face with a small tooth distant from the apex and slightly produced into a flange from the tooth to near the base. Maxillary palp (fig. 4) short and stout, the basal segment transverse longer than the apical segment which is bluntly rounded and slightly longer than wide; mala obtusely rounded with eight or nine broad setae, some of them in a line on buccal surface. Labial palp (fig. 4) with two short stout segments, the first slightly wider than long, the second much narrower, obtuse, and slightly longer than wide; ligula with two dorsal and two ventral setae; prementum with a pair of moderately large setae. A well defined large trident-shaped brownish thickening is present.

Prothoracic tergum strongly transverse, with a shining brown plate. The terga of three following segments each with a well defined lenticular prescutum.

Tergum of a typical abdominal segment, near the middle, with a very narrow transverse strip, defined by two impressed lines, separating two larger subdivisions; in addition there are folds between the segments which allow for alterations in body length. Hypopleurum not subdivided. Poststernellum distinct.

The caudal plate (fig. 2) is large, strongly sclerotised, oblique, and projects as an almost flat plate well beyond the ventral anal segment; the apical margin broadly rounded, the sides almost straight. The plate is made up partly of the eighth and partly of the ninth terga. Near the base are two separate transverse brown areas, and posterior to these the dorsally placed 8th abdominal spiracles. The main plate is divided by a pale longitudinal line but is otherwise continuous from the apex to the base which extends between the spiracles.

The tenth segment ventral, the anal opening between two longitudinal lobes and a median apical lobe (fig. 3).

Spiracles (fig. 5) biforous; as seen in surface view, with an almost circular cap with a small spiracular opening near the centre; from the latter a pair of partially subdivided chambers extend slightly beyond the peritreme. The posterior spiracles are dorsally placed, distinctly raised above the surface and with an encircling basal brown ring; they are larger than those of the thorax which are themselves larger than the abdominal spiracles.

Pedal lobes moderately protuberant rounded cushions, each with one fairly long seta, one rather shorter seta and a few minute setae.

Pupa.

Described from exuviae. The posterior extremity very much as in *Paepalosomus* (see below) except that there is a row of small bifid points on the sternum

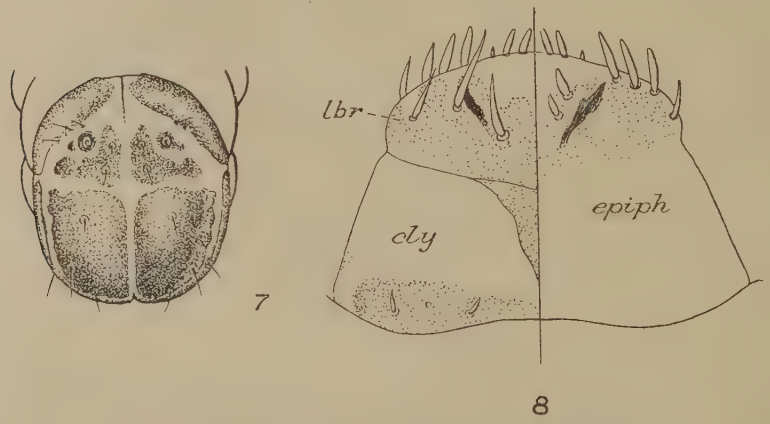
of the 7th segment, which, with the larger projections of the tergum, form a complete circle. Also of the six caudal projections from the 8th tergum the intermediate one of each side is very small.

Paepalosomus dealbatus, Boisd.

Two larvae, three pupae and a beetle were extracted from green stems of *Boehmeria*, sp. (Urticaceae) Dehra Dun, October (M. Bose).

Larva. (Figs. 7, 8.)

The mature larva has a general resemblance to that of *Peribleptus scalptus*. Length about 12 mm. Width of head about 1·0 mm. Prothoracic plate pale testaceous. The palps rather shorter and stouter than those of *Peribleptus*; the apical segment of maxillary



Figs. 7–8.—Larva of *Paepalosomus dealbatus*, Boisd.

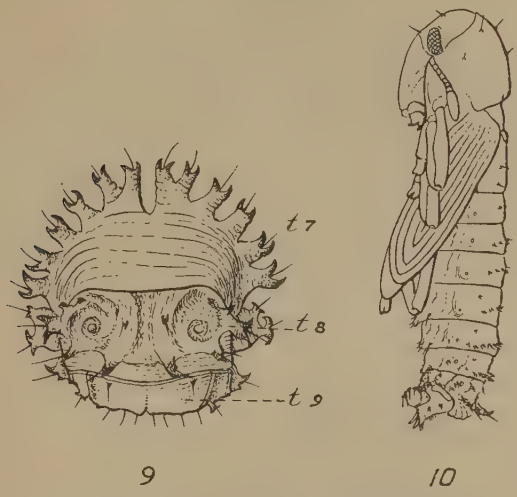
Fig. 7, Caudal plate in dorsal view; Fig. 8, Labrum (*lbr*), clypeus (*cly*) and epipharynx (*epiph*).

palp not longer than wide. Labrum and clypeus as in fig. 8. Epipharynx (fig. 8) with only four submarginal setae laterally. The caudal plate (fig. 7) more circular than that of *Peribleptus*; also the sclerotised part posterior to the spiracles is divided by a transverse pale line in addition to the longitudinal pale line resulting in the isolation of a pair of small subtriangular brown areas near the spiracles.

Pupa. (Figs. 9, 10.)

Length about 9 mm. Cylindrical. White, abdominal segments 7, 8 and 9 castaneous and strongly sclerotised. Head and thoracic terga with a few small points. Abdominal terga each with a transverse row of bifid projections which increase in size from the first tergum where they are few and very small. The seventh segment with a radiating set of about fourteen strong projections, each apically bifid and with a seta, forming a circle which is incomplete ventrally; each of the two most dorsal pairs of projections with a common stalk. From the ventral half or so of the posterior face of the seventh segment projects

the eighth tergum which carries six strong posteriorly directed projections and two spiracles which are larger than the others. The transverse ninth tergum is ventral to the eighth and



Figs. 9–10.—Pupa of *Paepalosomus dealbatus*, Boisd.

Fig. 9, Caudal view: *t* 7, *t* 8, *t* 9, terga of 7th, 8th and 9th abdominal segments; Fig. 10, Lateral view.

is partially enclosed by it; the carinate ventral margin with very weak teeth. The pupa is then posteriorly truncate, although rather irregularly so, the caudal face being made up by the terga of the 7th, 8th and 9th abdominal segments.

A NEW *SIMPLICIA* (LEP., NOCT.) FROM FIJI

By A. Ellen Prout.

Simplicia lautokiensis, sp. n.

♀. 33–34 mm.

Very near in build, palpus and general aspect to *S. butesalis*, Wlk., from which it differs in the absence of an areole, SC^5 of fore-wing being free from the cell, SC^2, SC^3, SC^4 stalked.

S. lautokiensis also differs from *butesalis* in the following particulars. Hind-wing pale, somewhat tinged with ochreaceous on proximal third, from about one-third costa to near tornus. Fore-wing with the antemedial line more erect, only weakly bent outward from costa to M; postmedial line only weakly excurved round the cell; the wing rather unusually strongly irrorated with black, except between the ante- and post-medial lines, where the wing appears somewhat paler owing to the reduction of dark irroration. On both wings the pale subterminal line is rather sharply defined.

Fiji: Lautoka, 21.x.27, 1 ♀-holotype; 8.viii.27, 1 ♀.

CHALCIDOID AND PROCTOTRUPOID PARASITES OF PESTS OF THE COCONUT PALM

By Ch. Ferrière, D.Sc.

(*Entomologist, Imperial Institute of Entomology.*)

The species mentioned in this paper have been reared by Mr. R. W. Paine and Mr. T. H. C. Taylor mainly from the two coconut tree pests *Tirathaba* spp. (Pyralidae) and *Promecotheca* spp. (Hispidae). Mr. Paine and Mr. Taylor have bred and studied these parasites during the last few years in Java and the Fiji Islands in order to introduce the most important into other islands; they intend to publish biological notes on them, and the following paper contains therefore only systematic information with descriptions of new species. I have also included here a few species received from Dr. S. Leefmans from Java, from Mr. J. L. Froggatt from New Guinea, and from Mr. R. J. A. W. Lever from the Solomon Islands.

The species thus obtained are :

(*a*) Parasites and hyperparasites of *Tirathaba* spp.

Antrocephalus renalis, Waterst.
Irichohaltichella tirathabae, sp. n.
Anacryptus impulsator, Walk.
Eurytoma sp.
Perilampus microgastris, Ferr.
Elasmus fumipennis, Cam.
Trichospilus pupivora, Ferr.
Syntomosphyrum javanicum, sp. n.
Trichogrammatoidea nana, Zehnt.
Trichopria tachinidarum, sp. n.
Calliceras manilae, Ashm.
Calliceras fijiensis, sp. n.
Telenomus tirathabae, sp. n.

(*b*) Parasites and hyperparasites of *Promecotheca* spp.

Elasmus hispidarum, sp. n.
Dimmockia javanica, sp. n.
Pleurotropis detrimentosus, Gahan.
Pleurotropis painei, sp. n.
Pleurotropis parvulus, sp. n.
Achrysocharis promecothecae, Ferr.
Achrysocharella orientalis, sp. n.
Closterocerus splendens, Kow.
Tetrastichus taylori, sp. n.
Oligosita utilis, Kow.

(*c*) Other species included :

Anastatus axiagasti, sp. n.
Tetrastichodes plesispae, sp. n.
Tetrastichodes brontispae, sp. n.
Melittobia hawaiiensis, Perk.
Syntomosphyrum zygaenarum, sp. n.
Microphanurus painei, sp. n.

Fam. Chalcididae.

Antrocephalus renalis, Waterst.

Antrocephalus renalis, Waterston, 1922, Ind. For. Rec., **9** : (II), 19, fig. 11–13.

Java : Buitenzorg, viii.1929 & iii.1931 (*R. W. Paine*).
Fiji Isl. : ii.1931 (*R. A. Lever*); xi.1931 (*R. W. Paine*).
Host. Pupa of *Tirathaba* spp.

This species seems to be widely distributed throughout the Indo-Malayan countries. The type specimens were bred in India from pupae of *Hypsipyla robusta*, Moore, and I have seen also specimens from the Philippine Islands. It is recognisable, among other characters, by the broad furrow along the middle of the scutellum and the entirely dark legs. As can be seen by the large series from Java, it varies greatly in size, the smallest female being only 4·5 mm. long, whereas the largest reaches 8 mm.; in the male the size varies from 4 to 6 mm.

Irichohaltichella tirathabae, sp. n.

♀♂. Body entirely black; only the anterior knees, the end of tibiae and the tarsi brownish.

♀. Head transverse, reticulate, dull; occiput excavate but not marginate; frons slightly concave above the antennae. Ocelli forming a low triangle, the lateral ocelli a little nearer to the margin of the eyes than their own diameter. Eyes short, oval; cheeks almost as long as the breadth of the eye. Antennae inserted just above the clypeus; scape narrow, elongate, but not reaching to the front ocellus; pedicel pear-shaped, about twice as long as broad; flagellum with 9 joints, the 1st small, as long as broad, narrower than the pedicel, the 2nd a little longer and broader than the 1st, the following joints cylindrical, scarcely

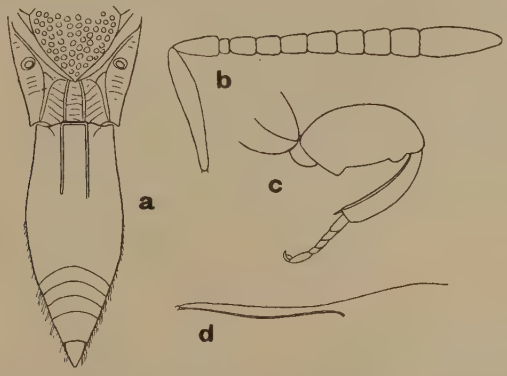


Fig. 1.—*Irichohaltichella tirathabae*, sp. n. (*a*) Propodeon and abdomen; (*b*) antenna; (*c*) hind leg; (*d*) wing nervature.

longer than broad, the 7th and 8th subquadrate; last joint not divided, pointed at apex and as long as the three preceding joints together. Thorax elongate, irregularly punctate; pronotum covered with large points; mesonotum not much longer than the pronotum, with smaller punctation, the interstices shining; parapsidal furrows entire and rather deep; scutellum pointed at apex; metanotum hidden under the sides of the scutellum; propodeon large, horizontal, almost flat above, with 2 median and 2 lateral carinae, joined by weak transversal carinae; sides of propodeon with a small tooth; spiracles large, rounded or short oval. Propleurae and mesopleurae excavate, finely rugulose; metapleurae convex,

strongly reticulate. Wings relatively small, not reaching the end of the abdomen; marginal ciliation obsolete; discal ciliae short and scarcely visible. Marginal vein distant from the margin of the wing, not distinct from the submarginal vein and slightly curved to a short stigmal vein. Legs short, strong, the anterior and median femora somewhat thickened; hind femora oval with two broadly separated teeth below, between which is a series of very small teeth. Abdomen oval, elongate, as long but narrower than the thorax, a little compressed on the sides, entirely smooth. 1st segment truncate in front, in contact with the propodeon, with two strong longitudinal carinae on the anterior half; these carinae form with the front margin an elongate rectangle, open behind; the following segments short, transverse, together shorter than the 1st, with long white ciliae on the sides. Ovipositor scarcely protruding.

♂. Quite similar; antennae with 10 joints; pedicel short, not longer than broad, the funicle joints a little longer than broad, broadening slightly towards the last joint; club not divided, pointed, as long as the two preceding joints together.

Length: ♀ 2·6–2·8 mm.; ♂ 2·2 mm.

Java: Buitenzorg, 2 ♀♀, 1 ♂, viii.1929 (*R. W. Paine*).

Host. The females are labelled: "Dissected from dead pupa of *Tirathaba rufivena*"; the male bears the label: "Bred from cocoon of *Apanteles tirathabae.*"

In the nervulation of the wing and the form of the hind femora, this species is closely related to the group of *Euchalcis*, Dufour. The genus *Irichohaltichella*, Cam., differs particularly in the form of the 2nd abdominal segment, which is elevated at the base and carinate longitudinally. All known species of that genus are from Australia. *I. pilosella*, Cam., the type species, is in the collection of the British Museum; the holotype is a male, which differs from the Javanese species specially by its larger size (it is 4·5 mm. long), its red legs, broader propodeon and the numerous longitudinal carinae extending over the entire length of the 2nd tergite; two stronger carinae on the anterior half of the tergite are similar to those of *I. tirathabae.*

Girault (1927, *Rec. S. Austr. Mus.*, **3**: 328) has described three other species and has given a key of the four known Australian species based mainly on the relative length of the 2nd and 3rd abdominal segments and on the coloration. Girault's species are distinguished by their smoky or dark wings.

Hockeria dexius, Walker, the type of which is in the British Museum, is also from Australia and seems to belong to that genus. It agrees with Girault's group of species where the 3rd tergite is over half the 2nd; its 2nd tergite is smooth and has two short basal carinae; legs and tegulae are red.

Anacryptus impulsator, Walk.

Anacryptus impulsator, Walker, 1862, Trans. Ent. Soc. Lond., **1862**: 348.

East Java: Banjoewangi, 2 ♀, 2 ♂, x.1929 (*R. W. Paine*).

Host. Pupa of *Tirathaba* sp.

These specimens are exactly similar to Walker's species, the type of which, in the British Museum, is from Celebes.

Fam. Eurytomidae.

Eurytoma sp.

Java: Buitenzorg, 1 ♀, viii.1929 (*R. W. Paine*).

Host. Pupa of *Tirathaba mundella*, containing dead adults of *Trichospilus pupivora*, Ferr.

A single female with the head broken.

Fam. Perilampidae.

Perilampus microgastris, Ferr.

Perilampus microgastris, Ferrière, 1930, Bull. Ent. Res., **21** : 353.

Java : Buitenzorg, 9 ♀, 3 ♂ (*R. W. Paine*).

Host. *Apanteles* sp., parasite of *Tirathaba* sp.

This species, easily recognisable by its small size and black body, has been found also in India and the Malay Peninsula. It was, in each case, a parasite of Microgasterinae.

Fam. Eupelmidae.

Anastatus axiagasti, sp. n.

♀♂. Body dark green, with purplish reflections on face, frons and, more or less, mesonotum. Cheeks light green. Apex of mesonotum more bluish or violaceous. Sides of pronotum and tegulae yellowish. Abdomen aeneous, with the end of the 1st and the 2nd segment white. Tip of ovipositor white. Male more shining green, without white spot on the abdomen. Antennae dark brown, with scape and apex of pedicel yellowish. Legs of female with the coxae concolorous to the body, the femora and tibiae black, with knees, sides of hind femora, more or less, and tarsi yellow, or sometimes orange-yellow with broad black stripes on each femora and tibiae. Legs of male yellow, with femora and apical end of

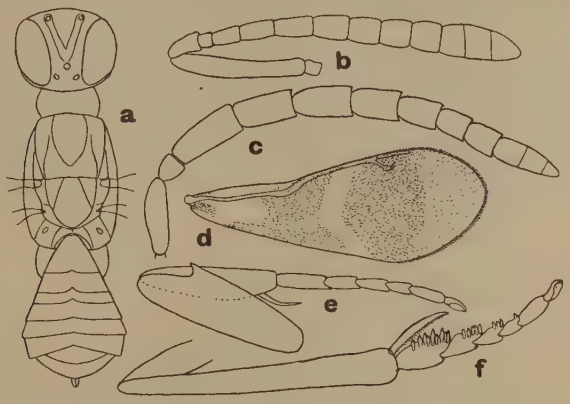


Fig. 2.—*Anastatus axiagasti*, sp. n. (*a*) Outline of body; (*b*) antenna of ♀; (*c*) antenna of ♂; (*d*) forewing of ♀; (*e*) fore-leg; (*f*) middle tibia and tarsus.

hind tibiae brown. Wings of female slightly infuscate in the middle below the stigma and covered with black discal ciliae except at base of wing and on a transversal arcuate band below the marginal vein, which is hyaline and glabrous. Wings of male entirely hyaline.

♀. Head transverse, very narrow behind the eyes. Ocelli forming a regular triangle, the lateral ocelli very near the eye-margin, but not touching it; eyes large broadly oval. Vertex with a few black ciliae. Seen from in front, the head is rounded, the internal margins of the eyes diverging towards the cheeks; these are about as long as half the breadth of an eye, with a furrow between base of eye and mandible. Antennal furrows narrow, shallow, converging to the front ocellus. Frons and face finely shagreened, dull; face covered with fine white ciliae. Antennae inserted level with the base of the eyes, 4 times closer to the eyes than to each other. Scape narrow, reaching almost to the front ocellus; pedicel slightly longer than broad, as long as $\frac{1}{4}$ of the scape; annellus small, subquadrate; 1st

funicle joint twice as long as broad, but a little shorter and narrower than the pedicel; 2nd as long as the pedicel; 3rd a little longer than the 2nd; the following joints gradually broader and shorter; 7th subquadrate, as long but twice as broad as the 1st; club with 3 joints, slightly broader than the last funicle joints and not quite as long as the 3 preceding joints together.

Thorax with the pronotum large, narrowed in front, almost smooth; mesonotum granulated, dull, except in the posterior concave portion which is smooth and shining. Scutellum and axillae covered with a fine and small reticulation, dull. Propodeon very short, with a small median carina; the sides rounded and smooth; spiracles short oval. Mesopleurae very finely striate, almost smooth. Wings reaching far beyond the tip of the abdomen; submarginal vein slightly curved before bending over to the marginal vein, and there a little thickened; marginal vein shorter than the submarginal and about $3\frac{1}{2}$ times longer than the stigmal; postmarginal vein almost twice as long as the stigmal. Marginal ciliation short and thin; discal ciliation close and thick, the glabrous transverse band on the average as broad as the length of the stigmal vein. Legs strong and elongate; anterior legs with the femora and, in a less degree, the tibiae broadened, the femora with a strong tooth before the apex, below; median legs much elongated, the tibial spur longer than the 1st tarsal joint; the 3 first tarsal joints with rather strong black teeth below; hind legs long and narrow, the tarsi as long as the tibiae.

Abdomen small, triangular, shorter than the thorax, almost smooth, very finely transversely striate. All segments short, transverse, with the hind margins more or less excised in the middle. Ovipositor scarcely protruding.

♂ a little shorter than the female; thorax normal, almost smooth and shining. Antennae longer; scape short, slightly broadened, 3 times longer than broad; pedicel short, rounded; 1st funicle joint elongate, broader than the pedicel, almost as long as the scape; 2nd as long as $\frac{3}{4}$ of the 1st; the 3rd–6th gradually shorter, but with the same breadth; the 7th still a little longer than broad; club narrower than the funicle, with 3 joints, a little longer than the 2 preceding joints together. Legs shorter and stronger, the anterior femora with a thickening but without tooth; median tibiae with a shorter spur. Abdomen smaller than the thorax.

Length: ♀ 2–2·3 mm.; ♂ 1·3–1·7 mm.

Solomon Isl.: Marau I. and Cape Marsh. 6 ♀, 14 ♂, ix.1928 (*R. W. Paine*); Ruavatu, Guadalcanal, 1 ♀, ix.1931; Russell Isl. and Guadalcanal, 7 ♀, vi.1932 (*R. A. Lever*).

Host. Eggs of *Axiagastus cambelli*, Dist.

Other specimens, morphologically quite similar, differ very much in coloration. To distinguish them from the type specimens I give them the name of

rufithorax, var. n. ♀. Head green, with purple reflections. Thorax with the pronotum, mesonotum and mesopleurae reddish, the mesonotum sometimes more or less greenish in the middle. Scutellum, propodeon and abdomen as in the type, the abdomen more distinctly white above near the base. Antennae reddish-yellow, only the 2 last funicle joints and the club black. Legs orange-yellow with black stripes only on the upperside on the median and hind femora. Wings with the discal ciliation thinner and less dark, the portion before the transverse glabrous band with short and light brown ciliae.

Solomon Isl.: Marau & Cape Marsh, 13 ♀; Guadalcanal, 4 ♀.

There are intermediates between these forms, a few specimens having a reddish thorax with dark flagellum of antennae, other having a darkened (greenish) thorax above and yellowish antennae except at apex. But the var. *rufithorax* is nearly always recognisable by its clearer legs and wings and at least reddish mesopleurae.

It is curious to have such widely different colour varieties emerging from the same eggs in the same conditions, and it would be interesting to know if they are the offspring of a single female. The males are all alike. I have already observed a similar case where the females vary in the same degree and occur in two different varieties, in *Anastatus menzeli*, Ferr., a parasite of the eggs of *Attacus atlas* in Java.

In the key of Australian species given by Girault (1915, *Mem. Queensl. Mus.*, **4** : 26), the typical form of this species would run near *racinei*, Gir., of which only one female is known, caught in the forest. Judging by the very short description, Girault's species differs by its larger size (2·75 mm.), the regularly finely scaly-punctate thorax and the pubescent anterior part of the mesopleurae. *A. axiagasti* seems to be more nearly related to *A. pentatomidivora*, Gir., another egg parasite of Pentatomids in Australia, especially in its swollen anterior femora. But the Australian species is quite different in its larger size, the dark wings with only two oblique eye-spots, the teeth on the middle tibiae and the relative length of antennal joints.

Fam. Elasmidae.

Elasmus fumipennis, Cam.

Cyclopleura fumipennis, Cameron, 1913, Ind. For. Rec., **4** : 97.
Elasmus fumipennis, Ferrière, 1930, Bull. Ent. Res., **20** : 416.

Java : Buitenzorg, 29 ♀, 6 ♂, ix.1929 (*R. W. Paine*).

Host. Bred from prepupae of *Tirathaba* spp.

Cameron's type, of which I have given a redescription, is from Borneo. This species can be distinguished from related species by its wings, which are hyaline at the base and strongly infumate on the apical half.

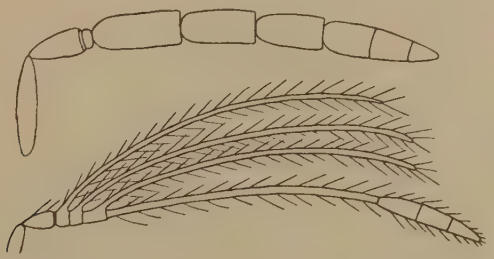


Fig. 3.—*Elasmus hispidarum*, sp. n. Antennae of female (above) and male (below).

Elasmus hispidarum, sp. n.

♀♂. Black, with violaceous reflections on head and thorax; postscutellum white; propodeon and 1st abdominal segment shining green; segments 2 to 4 reddish; tip of abdomen black with bluish reflections. Antennae brown, scape and pedicel yellow. Anterior legs clear yellow, only the base of coxae and a line along the femora and tibiae black; median and hind legs with the coxae black, except on the third terminal; the trochanters yellow and the femora black; more than the basal third of the hind femora are clear; tibiae and tarsi yellow with the ordinary black ciliae.

♀. Head as broad as the thorax, rounded in front. Punctation rather strong and close

on the front, more sparse on the face, the interstices smooth. Antennae inserted near the clypeus; scape short, as long as the pedicel with half the 1st funicle joint; pedicel twice as long as broad; funicle joints elongate, the 1st almost twice as long as the pedicel, the two others a little shorter; club with 3 joints not broader than the funicle and longer than the preceding joint.

Thorax finely shagreened, almost smooth; mesonotum as long as its apical breadth, covered with small black ciliae; scutellum more finely shagreened than the mesonotum; postscutellum triangular, covering the base of the propodeon, which is smooth and shining. Wings long and narrow, slightly infuscate; marginal vein long, stigmal vein punctiform. Legs with the coxae smooth, the femora finely striate; hind tibiae with the ciliae arranged in lozenges.

Abdomen smooth, narrower than the thorax, pointed behind and about as long as head and thorax together. Ovipositor scarcely protruding.

♂ similar, but with much shorter abdomen, not longer than the thorax; antennae with the two first funicle joints very short, the 3rd a little longer than broad, the 4th much elongate; the 3 branches long and narrow reaching almost to the apex of the club. Hind legs much elongate, the tarsi almost twice as long as the tibiae.

Length: ♀ 1·5–2·3 mm.; ♂ 1–2 mm.

Fiji: 7 ♀, 8 ♂, 1929 (*T. H. C. Taylor*).

Host. Larva of *Promecotheca reichei*.

This species is specially related to *E. elegans*, Crawf., from the Philippine Islands, from which it can be distinguished by the relative length of the antennal joints: in *elegans* the 1st funicle joint is about as long as the pedicel and the 3rd joint is twice as long as broad, whereas in *hispidarum* the 1st joint is almost twice as long as the pedicel and the 3rd is more than twice as long as broad. Moreover the hind coxae in *elegans* have the basal half black, in *hispidarum* about $\frac{2}{3}$ of the surface is black and the hind femora are also more broadly black.

Fam. Eulophidae.

Trichospilus pupivora, Ferr.

Trichospilus pupivora, Ferrière, 1930, Bull. Ent. Res., **21**: 358.

Java: Buitenzorg (*R. W. Paine*). Malaya: Sepang (*G. H. Corbett*). New Guinea: Papua, Port Moresby (*R. W. Paine*).

Host. Pupae of *Tirathaba* spp.

This species, which seems to be widely distributed in the East, and is often bred in great numbers, has also been received from India and Ceylon, where it was parasitic upon pupae of *Nephantis serinopa*, Meyr., *Thosea cervina*, Walk., *Spodoptera mauritia*, Boisd., and a puparium of a Tachinid fly parasite of *Nacoleia* sp.

Dimmockia javanica, sp. n.

♂. Body black or dark bluish-green, more shining green on the sides of the vertex, the end of the pronotum, the propodeon and the base of the abdomen; the rest of the abdomen aeneous. The male has a yellow stripe on the 2nd abdominal segment. Antennae dark brown, pedicel clearer; scape and under part of pedicel and 1st funicle joint yellowish. Wings hyaline, the veins pale. Legs with the coxae concolorous to the body, the trochanters clear, the femora dark brown, yellowish at apex, the knees, tibiae and tarsi yellow.

♀. Head transverse; vertex much broader than long, the three ocelli on a slight curve; the lateral ocelli at about the same distance from the eyes as from the anterior ocellus. Frons finely punctate, dull, the face more shining; cheeks as long as half the width of an

eye. Mandibles short and broad, with 4 teeth, the upper tooth longer and more pointed, the others short and rounded. Antennae inserted on the level of the base of the eyes; scape short and narrow, scarcely reaching to the front ocellus; pedicel small, a little longer than broad; two small ocelli; 1st funicle joint the longest, twice as long as broad, the 3 following joints shorter, but all longer than broad; club with two joints, the 2nd small and triangular. The relative length of the funicle and club joints is: 27.22.20.20.16.10.

Thorax coarsely reticulated; the scutellum more finely than the mesonotum; pronotum short, narrowed in front; mesonotum as long as broad, with six rather long ciliae in two series and others shorter on the sides; scutellum with four white ciliae, two on each side at the base and two near the end; propodeon smooth and shining, slightly striated on the sides, with a median carina and lateral rounded furrows on the sides above the hind coxae; lateral carinae only indicated at base. Wings large, reaching beyond the tip of the abdomen; marginal vein longer than the submarginal, and about five times longer than the stigmal vein; postmarginal vein scarcely longer than the stigmal. Legs relatively short, thin; tarsi with four joints subequal in length.

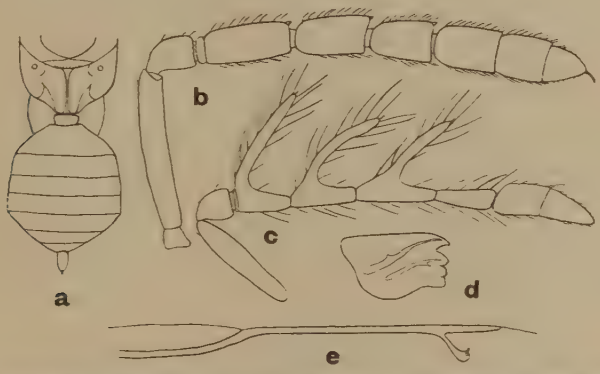


FIG. 4.—*Dimmockia javanica*, sp. n. (*a*) Propodeon and abdomen; (*b*) antenna of ♀; (*c*) antenna of ♂; (*d*) mandible; (*e*) wing nervature.

Abdomen rounded or short oval, shorter than the thorax, smooth. Petiole very short, not easily seen; 2nd segment the longest, but much broader than long, the following shorter and subequal in length. Ovipositor slightly protruding.

♂. Similar, but smaller. Antennae with three short ramelli on the three first funicle joints; the first ramellus the longest but only twice as long as the length of the joint, the two others shorter, the 3rd about as long as the 3rd joint; 4th joint shorter than the 3rd, slightly longer than the 1st; club with two joints, broader than the funicle and a little shorter than the scape; the funicle bears some long scattered ciliae, which are longer on the ramelli than on the joints. Abdomen small, shorter than the thorax, slightly longer than broad, rounded behind.

Length: ♀ 1·2–1·7 mm.; ♂ 1·1–1·3 mm.

JAVA: Poerwaredjo, 5 ♀, 3 ♂, iii.1930 (*R. W. Paine*).

Host. *Promecotheca* sp., an external parasite of larva.

The genus *Dimmockia*, Ashmead, is related through the length of the marginal vein to *Sympiesis*, Forst., but has a different form of antennae. Waterston *

* 1925, *Bull. Ent. Res.*, **15**: 385.

has completed the description of the genus, which may be distinguished by the long marginal vein, about five times longer than the stigmal vein, by the short, more or less rounded abdomen and by the short ramelli on the antennae of the male. *D. pallipes*, Mues., has a little longer and more slender antennal branches, but Dr. Gahan, of the U.S. National Museum, tells me that it is of the same type as those of *D. incongrua*, Ashmead, and *D. aburiana*, Watrst. *D. marylandica*, Gir., the type of which could not be located, must, judging by the description, belong to some other genus.

The American species seem all to be parasites of *Apanteles* spp. and other Braconids, whereas *D. aburiana*, Watrst., of Africa is, like *D. javanica*, a parasite of Hispid beetles. These two last species are very similar and may be distinguished by the following characters :

D. aburiana. Thorax blackish; antennae with the 3rd and 4th funicle joints of the female scarcely longer than broad, of the male also short, the ramelli with large and thick sensoria; propodeon with the lateral carinae well developed.

D. javanica. Thorax dark bluish-green; 3rd and 4th funicle joint of the female distinctly longer than broad, of the male narrow and elongate, the ramelli with long and thin ciliae; propodeon with the lateral carinae obsolete.

Pleurotropis detrimentosus, Gahan.

Pleurotropis detrimentosus, Gahan, 1930, Proc. U.S. Nat. Mus., **77** : (Art. 8) : 9.

Java : Poerwaredjo, 5 ♀, 5 ♂, iii.1930 (*R. W. Paine*); Buitenzorg, 3 ♀, 7 ♂, 1930 (*S. Leefmans*).

Host. Hyperparasite of *Promecotheca* sp., on *Dimmockia javanica* (Paine); larva of *Plesispa reichei*, Sharp (Leefmans).

The type of this species had been reared in India from cocoons of the Bethylid *Perisierola* attacking *Nephantis serinopa*, Meyr. The Javanese specimens agree exactly with the description.

Pleurotropis painei, sp. n.

♀♂. General coloration bluish-green, with purple and violaceous reflections. Face purplish-red, shining, frons violet, vertex bluish, depressions behind the ocelli violaceous,

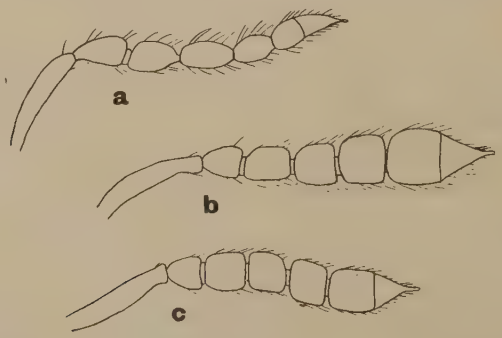


Fig. 5.—Antennae of : (*a*) *Pleurotropis painei*, sp. n.; (*b*) *P. detrimentosus*, Gahan; (*c*) *P. parvulus*, sp. n.

occiput black. Thorax entirely bluish-green, only the depressions before the scutellum violaceous. Abdomen greenish at the base, then aeneous; petiole black. Antennae and

legs entirely black with greenish reflections, the 3 first joints of tarsi white. Wings hyaline. Male more golden and purple on the thorax.

♀. Head a little broader than the thorax; face and frons smooth, as are also two shallow depressions situated obliquely behind the ocelli, between the eyes and the hind margin of the vertex. The area between the three ocelli and these depressions is very finely reticulated. Antennal furrow not deep. Antennae with the scape short and narrow, pedicel a little broader than the scape, twice as long as broad; the 3 funicle joints longer than broad, the 2 first as long as the pedicel, the 3rd a little shorter; club with 2 joints, not quite as long as the two preceding joints together.

Thorax with the pronotum short, narrower than the thorax and with a transverse carina. Mesonotum finely reticulated, parapsidal furrows very oblique at first, then sharply incurvate to the posterior margin and there forming two large shallow depressions that are broader than the space between them, shining and smooth. Scutellum smooth in the middle and in front, finely reticulated on the sides and behind; on the sides the reticulation is more elongate and like thin striation. Propodeon smooth with the two median carinae parallel at base then diverging strongly; lateral carinae as strong as the median carinae. Wings large the basal half without ciliation; marginal vein longer than the

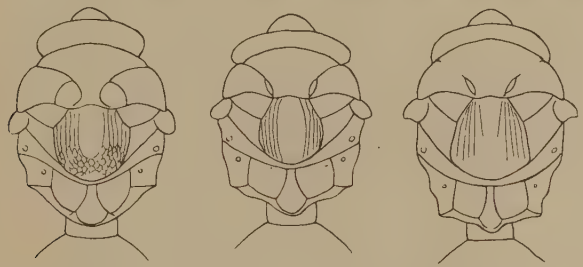


Fig. 6.—Thorax of: (*a*) *Pleurotropis painei*, sp. n.; (*b*) *P. detrimentosus*, Gahan; (*c*) *P. parvulus*, sp. n.

submarginal, stigmal and postmarginal veins very short, subequal in length. Legs with the hind coxae smooth; tibial spurs not longer than the first tarsal joint.

Abdomen not much longer than the thorax; petiole short, transverse, punctate; the rest of the abdomen smooth, 2nd segment longer than the following segments together. Ovipositor not exserted.

♂. Quite similar, smaller. Abdominal petiole as long as broad and as long as the propodeon; the rest of abdomen small, rounded, smooth.

Length: ♀ 1·3–1·5 mm.; ♂ 1–1·1 mm.

Java: Poerwaredjo, 9 ♀, 3 ♂, iii.1930 (*R. W. Paine*).

Host. *Promecotheca* sp., internal parasite of pupa.

This species is specially characterised by the scutellum, smooth in the middle and finely reticulate-striate on the sides and behind and by the four subquadrate depressions, which are smooth and shining and situated in pairs before the scutellum and behind the ocelli.

Pleurotropis parvulus, sp. n.

♀♂. Aeneous-black, with greenish reflections only on the face and the propodeon. Antennae and legs dark greenish, the three first tarsal joints white.

♀. Face and vertex smooth, without punctuation. Antennae inserted in the middle of the face, scape short, not reaching to the front ocellus, pedicel rounded, scarcely longer than broad; funicle joints a little broader, but not longer than the pedicel, rounded or subquadrate, the 3rd slightly broader than long; club with two joints, a little longer than the two preceding joints together, the last joint pointed.

Thorax with the pronotum narrower than the mesonotum, which is broader than long; parapsidal furrows obsolete, indicated only by two small and narrow depressions near the hind margin. Scutellum smooth with only a few very fine striae on each side. Propodeon smooth, short, with the two median carinae diverging gradually from the base; lateral carinae very fine. Wings reaching much beyond the tip of the abdomen; marginal vein narrow and long stigmal and postmarginal veins very short. Legs, hind coxae included, smooth; hind tibial spurs as long as the 1st tarsal joint with half the 2nd.

Abdomen a little shorter than the thorax, smooth, except the petiole finely punctate; 2nd segment about as long as two-thirds the length of the abdomen. Ovipositor slightly protruding.

♂. Quite similar. Abdominal petiole slightly longer than broad, the rest of the abdomen short, truncate behind.

Length: ♀ 1–1·1 mm.; ♂ 1 mm.

Java: Poerwaredjo, 7 ♀, 1 ♂, iii.1930 (*R. W. Paine*).

Host. Promecotheca sp., internal parasite of larva and pupa.

The species of *Pleurotropis* may be either primary or secondary parasites and are widely distributed. Many are still unidentified, especially from the Indo-malayan region. In order to facilitate their study, I give here a provisional key to those species actually known from that region.

South Asiatic species.

1. Mesonotum with a straight, deep, transverse fold across the middle connecting the parapsidal furrows; behind this fold and extending to the posterior margin is a deep, broad, rectangular depression divided by a median longitudinal ridge . . . . . *P. anomala*, Gahan (Philippines).
–. Mesonotum without transverse fold . . . . . 2.
2. Parapsidal furrows very oblique, reaching large rectangular depressions, before the scutellum, which are much broader than the space between them; two other similar depressions on the vertex behind the lateral ocelli . . . . . *P. painei*, sp. n. (Java).
–. The two shallow foveae near posterior end of mesonotum weaker and smaller 3.
3. Scutellum smooth in the middle . . . . . 4.
–. Scutellum not smooth in the middle . . . . . 5.
4. Lateral striation on the scutellum strong subparallel; funicle joints subquadrate. Length 1·3–1·6 mm. . *P. detrimentosus*, Gahan (India, Java).
. Lateral striation of scutellum very weak, less parallel; at least 3rd funicle joint broader than long. Length 1–1·2 mm. . *P. parvulus*, sp. n. (Java).
5. Scutellum with a broad bluish stripe along the middle. *P. lividiscutum*, Gahan (Sumatra).
–. Scutellum without such stripe . . . . . 6.
6. Mesonotum finely reticulated; scutellum with the base longitudinally rugulose, the posterior half with large reticulations. Coloration purplish aeneous . . . . . *P. foveolatus*, Crawford (India).
–. Mesonotum more strongly reticulated; scutellum with coarse raised irregular lines which curve and unite towards the apex, giving the appearance of U-shaped striae, medially with umbilicate punctures. Coloration dark green . . . . . *P. epilachnae*, Rohwer (India).

CHALCIDOID AND PROCTOTRUPOID PARASITES OF PESTS OF THE COCONUT PALM

By Ch. Ferrière, D.Sc.

Fam. Eulophidae (continued).

Achrysocharis promecothecae, Ferr.

Achrysocharis promecothecae, Ferrière, 1931, Bull. Ent. Res., 22 : 289, fig. 3.

Java : Poerwaredjo, 5 ♀, 1 ♂, iii.1930 (*R. W. Paine*).

Host. Eggs of *Promecotheca* sp.

This species, which may prove to belong to another genus, is closely related to *A. leptocerus*, Waterston, an egg parasite of another Hispid beetle in West Africa.

Achrysocharella orientalis, sp. n.

♀♂. Shining green with some bluish and reddish reflections; head more bluish, face reddish-violaceous. Antennae black, funicle sometimes with metallic shine. Legs shining black, with the trochanters partly, the knees slightly, the apex of tibiae and the three basal tarsal joints white. Male with a broad white spot near base of abdomen.

♀. Head transverse, as broad as the thorax; vertex broad, smooth, frons very finely reticulated; face punctate, dull. Eyes large, oval; cheeks narrower than one quarter of the length of an eye; ocelli forming a regular triangle, the lateral ocelli at the same distance from the eye-margin as from the front ocellus. Antennae inserted at the level of the base of the eyes; scape short, a little thickened, not reaching to the front ocellus; pedicel slightly longer than broad, scarcely as long as ⅔ of the scape; one very small annellus; funicle with 2 joints subequal in length, about 1½ times longer than broad; club with 3 joints, the 1st a little longer than broad, shorter than the 2nd funicle joint, the 2nd subquadrate, the last triangular, pointed at apex.

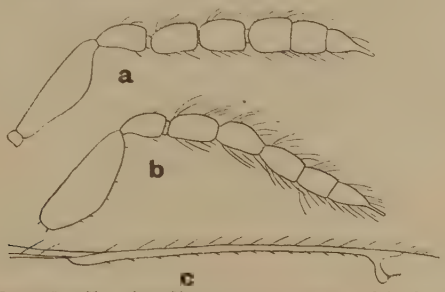


Fig. 7.—*Achrysocharella orientalis*, sp. n., *a*, antenna of ♀; *b*, antenna of ♂; *c*, wing nervature.

Thorax with the pronotum very narrow, transverse; mesonotum broader than long, very finely punctate-reticulated; parapsidal furrows well marked, specially near hind margin of mesonotum; scutellum quite smooth and shining; propodeon smooth, without median or lateral carinae, spiracles large, rounded. Wings broad, not, or scarcely, reaching the apex of abdomen; discal ciliation very small; base of wing without ciliation, but with a row of fine ciliae along the posterior margin. Marginal vein much longer than the submarginal; stigmal vein very short, punctiform; postmarginal vein as long as stigmal. Legs relatively short, shining, except the hind coxae which are granulated and dull.

Abdomen longer than the thorax, oval, pointed at apex; the tergites subequal in length. Ovipositor not protruding.

♂ similar; antennae with short and thicker scape, and thinner flagellum covered with white ciliae. Abdomen shorter and narrower than the thorax.

Length: ♀ 1·2–1·4 mm.; ♂ 1–1·1 mm.

Java: Poerwaredjo, 16 ♀, 4 ♂, iii.1930 (*R. W. Paine*).

Host. *Promecotheca* sp., probably a hyperparasite.

The genus *Achrysocharella*, Girault, is closely related to *Achrysocharis*, Gir., and is difficult to distinguish from Girault's descriptions. The present species is generically quite different from *Achrysocharis promecothecae* mentioned above and among the numerous related genera proposed by Girault agrees best with the species described in *Achrysocharella*. Only Australian species were previously known in this genus, which will probably be found to be widely distributed when better known.

Closterocerus splendens, Kow.

Closterocerus splendens, Kowalski (1915), 1917, Ann. d. Epiphyties, **4**: 307.

New Guinea: Manus Distr., 4 ♀, vi. 1932 (*J. L. Froggatt*).

Host. *Promecotheca* sp.

The type was described from the New Hebrides, as a parasite of *Promecotheca opacicollis*, Gestro. The author gives also some biological data, showing the oviposition and the development of the parasite in the larvae of the beetle.

The specimens which I have examined differ somewhat from the description and drawings of Kowalski, specially in the form of the antennae. The scape is broader at apex, the pedicel much more enlarged, rounded, about as broad as long, the two first funicle joints are a little broader than long. As the description and figures of *P. splendens* have been made from specimens mounted in Canada balsam, it is probable that the antennae are seen more or less from above, so that the flattened joints appear narrower than they are when seen from the side. This species is also characterised by the very fine reticulation of the scutellum, which is almost smooth, in contrast with the more strong and more dull reticulation of the mesonotum; in most related species, *C. trifasciatus*, Walk., from Europe, *C. insignis*, Watrst., from Ceylon and *C. africanus*, Watrst., from West-Africa, the reticulation is the same on mesonotum and scutellum.

The last-named African species is also a parasite of a Hispid beetle but has been bred from the eggs.

Tetrastichus taylori, sp. n.

♀♂. Shining green on head, sides of thorax and base of abdomen; mesonotum and scutellum more or less purplish-red; propodeon black; abdomen, except base, aeneous. Antennae dark brown, scape yellow. Legs with the coxae green, the femora brown with metallic reflections, the trochanters, apex of femora, the entire tibiae and tarsi, orange-yellow.

♀. Head transverse, as broad as the thorax, very short behind the eyes. Ocelli forming a low triangle, the lateral ocelli at the same distance from the eye-margin as from the front ocellus; stemmaticum convex, surrounded by a fine furrow, which forms a transverse oval and is united to the eye-margins by short furrows. Frons with a fine and sparse punctation; antennal furrows broad, shallow, smooth. Cheeks a little longer than half the length of the eyes, with a fine furrow extending from the eye to the mandible. Antennae with the scape narrow, reaching to the front ocellus; pedicel about twice as long as broad; two very small annelli; the 3 funicle joints longer than broad, the 1st and 2nd subequal in length, a little longer than the pedicel, the 3rd shorter and broader, but still as long as the pedicel; club with 3 joints, as long as the 2 preceding joints together.

Thorax finely shagreened. Parapsidal furrows well marked; the median furrow on the mesonotum fine and more or less obsolete in front; the longitudinal furrows on the scutellum

strong. Propodeon more strongly shagreened, dull, with a median and lateral carinae; spiracles small and oval. Mesopleurae smooth. Wings large, reaching beyond the apex of abdomen; submarginal vein with a single bristle; marginal vein as long as the submarginal, narrow; stigmal vein as long as a ¼ of the marginal, a little thicker at apex. Legs with the anterior and posterior coxae granulate.

Abdomen short, not or little longer than the thorax, pointed behind; ovipositor slightly protruding.

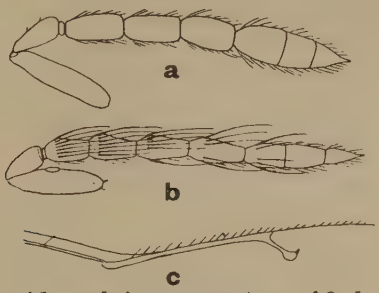


Fig. 8.—*Tetrastichus taylori*, sp. n., *a*, antenna of ♀; *b*, antenna of ♂; *c*, wing nervature.

♂. Smaller; differs only through the form of the antennae. Scape short with a rounded sensorial organ; all the funicle joints longer than broad and longer than the pedicel, the 1st slightly shorter than the others; club elongate, longer than the 2 preceding joints together; each funicle joint and the 1st club joint bear a half ring of long ciliae, which are longer than the joints. Abdomen oval, depressed, a little shorter than the thorax.

Length: ♀ 1·4–1·9 mm.; ♂ 1·1–1·4 mm.

Fiji Isl.: 5 ♀, 3 ♂, 1929 (*T. H. C. Taylor*); Nabavatu, 1 ♀, ii.1932, Suva, 2 ♀, iii.1932 (*R. W. Paine*).

Host. "Hyperparasite of *Promecotheca reichei*, ex *Elasmus*." The specimens from Suva are labelled "Ex *Promecotheca bicolor*."

This is a typical *Tetrastichus*, Hal., belonging to the group in which the males have whorls of long hairs on the funicle joints and a rounded sensorial organ on the scape. I have compared it with the descriptions of Asiatic and Australian species but cannot identify it with any of them.

Tetrastichodes plesispae, sp. n.

♀♂. Body dark aeneous-green, mesonotum almost black with dark bluish reflection; base of abdomen shining green, the rest aeneous. Antennae brown, scape and pedicel yellow. Legs with dark coxae, concolorous to the thorax, the femora brown, the trochanters, knees, tibiae and tarsi light yellow.

♀. Head very transverse; ocelli in a very low triangle, the lateral ocelli nearer to the eye-margin than to the front ocellus. Vertex and frons covered with rather long and coarse ciliae. Antennae with the scape narrow and short, not reaching to the front ocellus; pedicel elongate, 2½ times longer than broad; one small annellus; the 3 funicle joints shorter than the pedicel, the 1st 1½ times longer than broad, the 2nd only slightly longer than broad, the 3rd subquadrate, a little broader than the others; club with 3 joints, broader than the funicle and slightly longer than the two preceding joints together; ciliation very fine, almost as long as the breadth of the joints.

Thorax very finely shagreened, almost smooth. Mesonotum without median furrow, but the parapsidal furrows strong and the longitudinal furrows on the scutellum well marked. Propodeon finely reticulated with a median carina and lateral carinae; spiracles rounded.

Wings large, reaching beyond the apex of the abdomen; marginal vein about as long as the submarginal, stigmal vein narrow, almost as long as half the length of the marginal. Submarginal vein with only one bristle; discal ciliation obsolete at base, strong on apical half.

Abdomen shorter and narrower than the thorax, somewhat compressed at apex, with the hypopygium protruding below but not reaching beyond the tip of the abdomen. Ovipositor not protruding.

♂. Differs only by its smaller size, especially the shorter abdomen, and by the form of the antennae. The scape is shorter and somewhat broader, with an elongate sensorial organ; pedicel as long as half the scape; one small annellus; the 4 funicle joints subequal in length, the 1st slightly shorter than the others, almost quadrate, the 2nd to 4th a little longer than broad; club not broader than the funicle, pointed, longer than the two preceding joints together; ciliae about as long as the breadth of a joint, evenly distributed.

Length: ♀ 1·1–1·4 mm.; ♂ 0·9–1·2 mm.

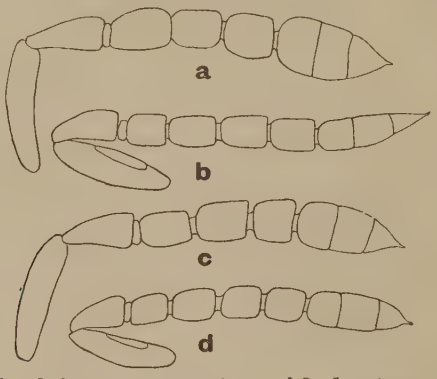


Fig. 9.—*Tetrastichodes plesispae*, sp. n., *a*, antenna of ♀; *b*, antenna of ♂. *T. brontispae* sp. n., *c*, antenna of ♀; *d*, antenna of ♂.

Java: Poerwaredjo, 9 ♀, 1 ♂, iii.1930 (*R. W. Paine*); Buitenzorg, 3 ♀, 1♂, viii.1929, 5 ♀, 3 ♂, 1930 (*Dr. S. Leefmans*).

Host. Larvae of *Plesispa reichei*, Sharp.

Tetrastichodes brontispae, sp. n.

♀♂. Black, with some faint greenish reflections on face, propodeon and base of abdomen. Antennae yellow, with the funicle joints more or less, sometimes only the last, and the club brownish. Legs with coxae concolorous to the body, trochanters yellow, femora dark brown except at apex, knees, tibiae and tarsi yellow. Wing nervulation brown.

♀. Head much transverse, the ocelli forming a curve on the narrow vertex; lateral ocelli at equal distance from the eye-margin and the front ocellus. Vertex finely shagreened, covered with short black ciliae. Frons and face smooth. Mandibles with two teeth. Antennae with the scape short, not reaching to the front ocellus; pedicel slightly longer than half the scape, twice as long as broad; one short and transverse annellus; 1st funicle joint shorter than the pedicel, only a little longer than broad; 2nd joint of the same length as the 1st, but slightly broader; 3rd shorter than the 2nd, a little broader than long; club with 3 joints, pointed, about as long as the two preceding joints together.

Thorax a little flattened above, finely shagreened on the mesonotum and scutellum. Parapsidal furrows deep; middle furrow on the mesonotum missing; longitudinal furrows on the scutellum fine but clearly marked. Mesopleurae finely punctate. Propodeon rugulose, dull; median carina very fine; spiracles small, rounded. Wings large, reaching far beyond the apex of the abdomen; submarginal vein with one bristle; marginal vein

as long as the submarginal; stigmal vein narrow, ¼ as long as the marginal; marginal ciliation very short; discal ciliation short and close.

Abdomen small, rounded, shorter and broader than the thorax depressed above, flat below. Ovipositor scarcely protruding.

♂. Antennae a little longer; scape short with an elongate sensorial organ; pedicel longer than broad; annellus small; 4 funicle joints subequal in length, more or less quadrate or rounded; club a little shorter than the 3 preceding joints together. Abdomen depressed, generally more oval, not much shorter than the thorax, but sometimes also short and rounded.

Length: ♀ 0·8–1·2 mm.; ♂ 0·9–1·1 mm.

JAVA: East, 24 ♀, 7 ♂, 1930 (*Dr. S. Leefmans*); DUTCH NEW GUINEA, North Coast, 1 ♀, 1931 (*Dr. A. Reyne*).

Host. Larva and pupa of *Brontispa longissima* (Java) and of *B. froggatti* (New Guinea).

This species differs from *T. plesispae* by its smaller size, its almost quite black body, its shorter and more rounded abdomen and the respective length of antennal joints. No other species of *Tetrastichodes* is known to me from the Indo-Malayan region, except *T. asthenogmus*, Watrst., bred from the ootheca of a cockroach in Ceylon, which is quite different, being related to *T. hageneni*, Ratz.; *T. browni*, Ashm., from the Philippines, of which only one specimen has been found, is described too shortly to be recognisable.

Syntomosphyrum javanicum, sp. n.

♀♂. Body aeneous-black. Antennae dark brown; scape and pedicel yellowish. Clypeus and mandibles reddish. Legs entirely yellow, except anterior coxae black and anterior femora mainly brownish. Abdominal petiole yellow. Tegulae and nervature yellowish-brown.

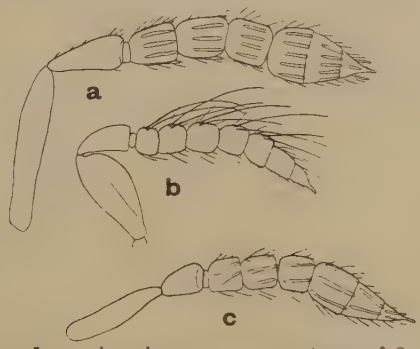


FIG. 10.—*Syntomosphyrum javanicum*, sp. n., *a*, antenna of ♀; *b*, antenna of ♂. *S. zygaenarum*, sp. n., *c*, antenna of ♀.

♀. Head transverse. Vertex smooth, finely rugulose between the ocelli, covered with small black ciliae. Ocelli forming a low triangle, the lateral ocelli nearer to the eye-margin than to the front ocellus. Face depressed (only after death?), finely shagreened; cheeks with a distinct furrow between eye and mandible. Antennae inserted at the level of the base of the eyes; scape narrow, reaching not quite to the front ocellus; pedicel narrow, as long as half the scape and about 2½ times longer than broad; 2 very small annelli; the 3 funicle joints a little broader than the pedicel, short, the 1st and 2nd slightly longer than broad, the 3rd subquadrate; club with 3 joints, not longer than the two preceding joints together, the last joint pointed.

Thorax very finely reticulated, dull. Mesonotum covered with a dense ciliation, without median furrow, but with the parapsidal furrows well marked and straight. Scutellum without inner longitudinal furrows, with two long ciliae on each side near the outer furrows. Mesopleurae smooth and shining, only finely punctate in front. Propodeon short, finely shagreened, with a median carina, spiracles rounded, relatively large. Wings large, with a very short marginal ciliation and short and dense discal ciliation; base of wing without ciliation; submarginal vein with 4 bristles; marginal vein as long as the submarginal; stigmal vein not longer than $\frac{1}{4}$ of the marginal.

Abdomen oval, slightly longer than the thorax. Petiole very short; tergites subequal in length. Ovipositor very slightly protruding.

♂. Differs from the female by smaller size, depressed abdomen, shorter and stronger legs, specially the anterior and median legs, where the tibiae are a little thicker and the tarsi much shorter, the joints being scarcely longer than broad, except the last. Antennae with the scape short and slightly foliaceous ventrally; pedicel not quite twice as long as broad; the two annelli very small; the 4 funicle joints rounded, the 1st and 4th somewhat broader than long, the 2nd and 3rd as long as broad; club with 2 joints, pointed, longer than the two preceding joints together. Each funicle joint bears a whorl of long bristles, which are about 3 times longer than the joints.

Length: ♀ 1·2–1·7 mm.; ♂ 1–1·3 mm.

Java: Banjoewangi, 23 ♀, 5 ♂, x.1929 (*R. W. Paine*).

Host. Hyperparasite of *Tirathaba* sp. on *Anacryptus impulsator* and on *Erycia basifulva*.

Syntomosphyrum zygaenarum, sp. n.

♀. Shining dark green, with purple reflections more or less marked on vertex, scutellum and middle of abdomen. Antennae brown, scape and pedicel yellow. Mandibles yellow at base, reddish-brown at apex. Legs, including the coxae, entirely light yellow. Tegulae and nervature of wings yellowish. Abdominal petiole yellow.

Head transverse; vertex very finely rugulose, almost smooth with scattered ciliae. Ocelli forming a low triangle, the lateral ocelli nearer to the eye-margin than to the front ocellus. Face concave; cheeks broad with a fine furrow from eye to mandible. Antennae short; scape not reaching to the front ocellus; pedicel about as long as $\frac{1}{3}$ of the scape, scarcely longer than broad; two very small annelli; the 3 funicle joints short, subequal in length, subquadrate or slightly broader than long; club with 3 joints, much pointed and as long as the funicle.

Thorax almost smooth, shining. Mesonotum with scattered white ciliation; parapsidal furrows well marked, straight. Scutellum without inner longitudinal furrows, with two long ciliae on each side. Propodeon smooth, without median carina. Wings broad, reaching beyond the tip of abdomen; submarginal vein with 3 bristles; marginal vein a little longer than the submarginal; stigmal vein about as long as $\frac{1}{3}$ of the marginal; marginal ciliation very short, discal ciliation dense on apical half of wing, more scattered and a little longer below marginal vein. Legs with femora slightly thickened and the 4 tarsal joints subequal in length, except the 3rd a little shorter.

Abdomen not much longer than the thorax but narrower; petiole very short, scarcely visible, the following tergites subequal in length. Ovipositor slightly protruding.

Length: 0·9–1·2 mm.

Solomon Isl.: Cape Marsh, Kaylan, 19 ♀, 29.ix.1928 (*R. W. Paine*).

Host. Tachinid fly parasite of Zygaenids.

Specimens bred in Java (*T. H. C. Taylor*) as primary and secondary parasites of *Artona catoxantha* seem to agree with the specimens from the Solomon Islands. The male is similar to the females and has the antennae as the male of *S. javanicum*, from which it differs by smaller size, green coloration and entirely clear legs.

The following key to Indo-Malayan species will help to recognise these two new species.

1. Antennae elongate, at least two funicle joints longer than broad . . . 2.
–. Antennae short, funicle joints transverse, at least the third joint distinctly broader than long . . . . . 3.
2. Pedicel as long as ⅓ of the scape, not longer than the 1st funicle joint. Legs dark, coxae and femora black, tibiae and tarsi fuscous. Hind tarsi with joint 1 shorter than 2 . . . . . *S. taprobanes*, Waterston.
–. Pedicel as long as half the scape, longer than the 1st funicle joint. Legs entirely pale, except anterior coxae and femora. Hind tarsi with joint 1 longer than 2 . . . . . *S. javanicum*, sp. n.
3. Body shining black. Legs with the coxae blackish, the femora brownish and the tibiae and tarsi ferrugineous. Length of body 1·5–2 mm. *S. indicum*, Silvestri.
–. Body shining green. Legs entirely clear yellow. Length of body 0·9–1·2 mm. . . . . *S. zygaenarum*, sp. n.

Melittobia hawaiiensis, Perk.

Melittobia hawaiiensis, Perkins, 1907, Proc. Haw. Ent. Soc., **1907** : 124.

Malaya : Utan Melintang, 16 ♀, vi.1924 (*G. H. Corbett*).

Host. Tachinid parasitic on *Artona catoxantha*.

Solomon Isl. : Malanlalo, 47 ♀, ix.1928 (*R. W. Paine*).

Host. Chalcid (*Brachymeria salamonis*, Cam.) and Tachinid parasites of larvae of the coconut bagworm.

This species is probably widely distributed in the Malayan and Australian regions. Originally described from Hawaii, it has since been found by Masi as far west as the Seychelles. The series from the Solomons and Malaya agree with the original description.

M. hawaiiensis is specially a parasite of wasps and bees, *Megachile*, *Sceliphron*, *Pison*, *Odynerus*, and I have seen specimens sent from Malaya by Mr. H. T. Pagden, as parasites of *Megachile disjuncta*, F., and *Pison argentatum*, Sh. Like *M. acasta*, Walk., it has probably many hosts. Swezey (1909) obtained it in Hawaii from the bud worm, *Ereunetis flavistriata*, Wlsm.; the specimens studied here are mostly hyperparasites in Tachinid pupae.

The females of *Melittobia* offer few specific characters, and it is probable that several of the described species are synonyms either of *M. acasta*, Walk., or *M. hawaiiensis*, Perk. These two species can be most easily distinguished by the form of the antennae of the male; in *M. acasta* the 1st funicle joint is large, followed by three small rounded joints; in *M. hawaiiensis* the 1st funicle joint is small, the 2nd and 3rd large, the 4th small and transverse; the scape is in this last species also broader and more curved, the pedicel being almost hidden inside it.

Philopison clavicornis, Cameron, which is a *Melittobia*, reared in Borneo from *Pison sarawakensis* and *Pelopoeus madraspatanum*, is related and perhaps only a variety of *M. acasta*, Walk.

Fam. Trichogrammatidae.

Trichogrammatoidea nana, Zehnt.

Chaetostricha nana, Zehntner, 1896, Meded. v.h. Proefstation Oost-Java (n.s.), **23** : 14–16, Pl. I.
Trichogrammatoidea nana, Girault, 1911, Trans. Amer. Ent. Soc., **37** : 13.

The following specimens, sent to the Imperial Institute of Entomology, I consider to belong to this species :

Fiji : 1929 (*T. H. C. Taylor*); ex *Tirathaba* sp. and Tineids on coconut.

Fiji : Suva, vii.1932 (*H. W. Simmonds*); ex eggs of *Nacoleia octasema*, Meyr.

Solomon Isl. : Lingatu (*R. W. Paine*); ex eggs of *Brontispa froggatti*, Shp.

This species can be readily distinguished from the true species of *Trichogramma* by the jointed antennal funicle of the male, the dark cloud at the base of the wing in the female and the longer marginal ciliation of the wing. It seems to be widely distributed, but everywhere rare.

Dr. van der Goot, who has given me valuable information about the oriental *Trichogramma*, for which I am greatly obliged, tells me that *T. nana*, Zehnt., has been bred in Java and Sumatra from the eggs of the following hosts : *Diatraea striatalis* and *Grapholitha schistaceana* on sugar-cane, *Deiopeia pulchella* on *Crotalaria*, *Rhodoneura myrtacea* on *Palaquium*, *Nephopteryx robusta* on *Citrus*, *Heliothis obsoleta* on *Physalis*.

Oligosita utilis, Kow.

Oligosita utilis, Kowalski (1915), 1917, Ann. d. Epiphyties, **4** : 302.
Chaetostricha cratitia, Waterston, 1922, Bull. Ent. Res., **13** : 184 (*new syn.*).

Fiji : Futuna, 1 ♀, vi.1922; Labesu, 2 ♀, 2 ♂, x.1923 (*H. W. Simmonds*); Suva, 1 ♂, i.1927 (*R. W. Paine*); Nabavatu, 2 ♀, 1 ♂, x.1929 (*T. H. C. Taylor*); 8 ♀, 3 ♂, vii.1930 (*R. W. Paine*).

Host. Eggs of *Promecotheca reichei* and *P. bicolor*.

This species was first described by Kowalski from specimens bred in the New Hebrides from eggs of *Promecotheca opacicollis*, Gestro. The specimens (2 ♀) studied by Waterston had been sent from Fiji as parasites of *Promecotheca reichei*.

The specimens received by the Imperial Institute of Entomology (13 ♀, 7 ♂), all from Fiji, show clearly that *C. cratitia*, Watrst., the type of which could be compared, and *O. utilis*, Kow., are the same species. The descriptions and figures given by both authors agree exactly. Waterston could not have been aware of the existence of Kowalski's species.

There is some doubt whether this species belongs to the genus *Chaetostricha*, Walk., or *Oligosita*, Hal. Waterston, following Kryger's monograph of European Trichogrammidae (1918, Ent. Medd., **12** : 257), has described it in *Chaetostricha*. Masi, who had seen Kowalski's species, referred it to *Oligosita*. I believe that it is in this later genus that it is best placed in view of the fact that the description of the genotype of *Chaetostricha*, *C. dimidiata*, Walk., is too short to form an opinion about that genus, for which Kryger and Girault have different interpretations, and that in the form of the antennae and wings, this egg-parasite of *Promecotheca* agrees very well with other species of *Oligosita*.

Fam. Diapriidae.

Trichopria tachinidarum, sp. n.

♀♂. Body shining black. Antennae of female with the scape reddish-brown, joints 2 to 7 orange-yellow and the 5 last joints black. Antennae of male brown, with the scape reddish and the pedicel orange-yellow. Legs entirely orange-yellow.

♀. Head globulose, entirely smooth; ocelli forming a small regular triangle; eyes oval, small; cheeks as long as the eyes; vertex with a few scattered long bristles. Antennae with 12 joints; the scape thicker than the funicle, about as long as the 4 following joints together; pedicel narrow, about twice as long as thick; 3rd joint as long as the pedicel, but narrower; the following joints gradually shorter, the 6th and 7th scarcely longer than broad; 8th thicker than the 7th, rounded; 9th to 12th still broader, forming a club.

Thorax smooth, with tufts of ciliae on the sides of the prothorax and, shorter and more scattered, on the sides of the propodeon. Mesonotum broader behind than in front, but always narrower than the head. Scutellum with a rounded fovea in the middle near the anterior margin. Propodeon with a conspicuous median carina. Wings hyalin, large, reaching beyond the apex of the abdomen by almost $\frac{1}{3}$ of their length; marginal ciliation rather long; marginal vein situated before the third of the length of the wing. Legs normal, with the femora and tibiae club-like, the hind tibiae narrow at base, thickened on the apical third.

Abdomen oval, as long as the thorax, quite smooth. Petiole a little rugulose, covered with white ciliae, a little longer than the hind coxae; the 2nd segment covers almost all the

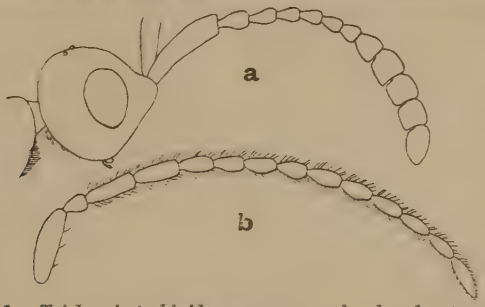


FIG. 11.—*Trichopria tachinidarum*, sp. n., *a*, head and antenna of ♀; *b*, antenna of ♂.

rest of the abdomen; the following segments very short, transverse, forming together a short triangle.

♂. Similar to the female, from which it differs only by the form of the antennae and the shorter and broader abdomen. Antennae longer than the body, covered with short ciliae; scape somewhat curved; pedicel small, rounded; 3rd joint elongate, narrower than the pedicel, about 4 times as long as broad; 4th a little shorter, curved and broadened at apex; the following joints oval, about twice as long as broad, the last joint a little longer.

Length: ♀♂ 1·3–1·5 mm.

JAVA: Buitenzorg, 6 ♀, 3 ♂, xi.1930 (*R. W. Paine*).

Host. Tachinid fly parasitic on *Tirathaba* sp.

This species is closely related to *T. indica*, Kieff., from which it can be distinguished by the entirely black thorax (in *indica* the propodeon is red), the slightly longer antennal joints and the smaller size.

Fam. CALLICERATIDAE.

Calliceras manilae, Ashm.

Ceraphron manilae, Ashmead, 1904, Proc. U.S. Nat. Mus., **28**: 135.

JAVA: Buitenzorg, 18 ♀, 3 ♂, ix.1929 (*R. W. Paine*).

Host. From cocoons of *Apanteles tirathabae*, Wilk.

Ashmead's description of *manilae*, from the Philippine islands, is very short, so that it is difficult to form a clear opinion about this species. But the specimens from Java agree exactly with that description, and I have little doubt that they really belong to this species, which is probably widely distributed in the Oriental region. Other specimens which I ascribe also to *C. manilae*, Ashm., were received from Dehra Dun, India, as parasites of *Apanteles machaeralis*, Wilk.

Calliceras fijiensis, sp. n.

♀♂. Body black. Antennae with scape and pedicel reddish-yellow, funicle more or less brown, the 3 or 4 last joints black in the female, brown as the funicle in the male. Legs orange-yellow, only middle coxae brownish. In the male abdomen reddish below at base.

♀. Head finely granulose, dull, a little broader than the thorax. Frons not much impressed above the antennae. Ocelli very small, the lateral ones nearer to each other than to the eye-margin. Eyes large, oval; cheeks half as long as the transversal diameter of an eye. Antennae inserted at the base of the face, with 10 joints; scape narrow at apex, a little thickened at base, as long as the 4 following joints together; pedicel narrow, elongate, about 4 times as long as thick; 3rd joint shorter than the pedicel, but still 3 times as long as thick, 4th to 7th joints gradually shorter, the 7th as long as broad; 8th to 10th joints broader, forming a club, the 8th and 9th not quite twice as long as broad, the 10th more elongate; the 3-jointed club is almost as long as the 5-jointed funicle.

Thorax finely punctate, narrow, about twice as long as broad; pronotum very short, partly hidden by the mesonotum when seen from above; mesonotum with a fine but distinct median furrow; scutellum longer than broad and a little longer than the mesonotum; the furrows of the frenum finely crenulated, meeting in the middle a little before reaching the posterior margin of the mesonotum; postscutellum with a relatively strong median tooth, which is darker at base than at apex; propodeon very short, with small lateral teeth; pleurae smooth and shining, the mesopleurae very finely striate on the upper part. Wings large, but reaching only a little beyond the apex of the abdomen; radial nerve curved, not quite twice as long as the marginal vein. Legs short, the hind femora slightly swollen.

Abdomen a little longer than the thorax, truncate in front, pointed at apex; the 2nd tergite covers about the ⅓ of the length of the abdomen; following segments short and transverse. Tergites smooth, the 2nd with a few short striae in front. Pygidium large, reaching to or a little beyond the tip of the abdomen. Ovipositor slightly protruding.

♂. Similar, but smaller. Antennae longer, the scape thicker, all funicle joints longer than broad; 3rd antennal joint as long as the pedicel; 4th to 6th a little shorter; 7th to 10th as long as the 3rd but slightly broader; last joint longer than the 10th. Abdomen not longer than the thorax.

Length: ♀ 1–1·3 mm.; ♂ 0·8–0·9 mm.

Fiji Isl.: Taveuni, 10 ♀, 2 ♂, xi.1931 (*R. W. Paine*); Solomon Isl., 3 ♀, 1 ♂, xi–xii.1931 (*R. J. A. Lever*).

Host. Apanteles tirathabae, Wilk.

The specimens from the Solomon Islands are a little larger, but identical with the specimens from Fiji. They differ from the specimens of *C. manilae*, Ashm., bred in Java from the same host, in the following main characters: Body more slender and more elongate, head and thorax more finely punctate, antennae longer, all the joints more elongate, but specially the two first club joints about twice longer than broad (in *manilae* subquadrate), base of 2nd abdominal segment more finely striate, hypopygium more developed.

Fam. Scelionidae.

Telenomus tirathabae, sp. n.

♀♂. Black; antennae light brown, scape yellowish, club black; legs brownish-yellow; wings hyaline.

♀. Head transverse, rounded in front; frons and vertex with small scattered punctures, smooth between the points; ocelli wide apart, the lateral ocelli touching almost the margin

of the eyes; eyes shortly oval, very finely ciliate; cheeks broad. Antennae inserted above the clypeus, with 11 joints; scape almost as long as the 6 following joints together: pedicel pyriform, about twice as long as broad; 3rd joint a little broader than the pedicel, but shorter, as long as broad; joints 4 to 7 small, rounded, the 7th a little broader than the 6th; joints 8 to 10 much broader and thicker, a little broader than long; 11th joint slightly longer than the preceding.

Thorax with the mesonotum broader than long, finely punctate like the head, but a little more closely. Scutellum smooth, rounded at apex. Wings large, reaching far beyond the tip of the abdomen, about 2·7 times longer than their largest breadth; the longest marginal ciliae about as long as $\frac{1}{4}$ of the breadth of the wing. Marginal vein slightly thickened; stigmal vein twice as long as the marginal, with a thick, rounded knob; post-marginal vein more than twice longer than the stigmal.

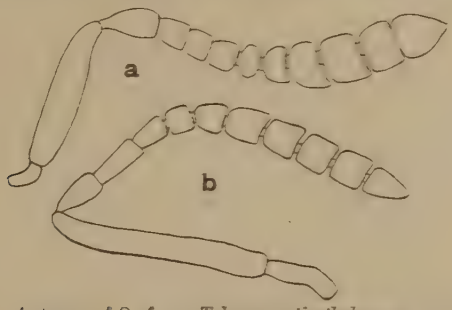


FIG. 12.—Antenna of ♀ of: *a, Telenomus tirathabae*, sp. n.; *b, Microphanurus painei*, sp. n.

Abdomen smooth and shining, with the 1st tergite and only the extreme base of the 2nd striate; 1st tergite short, transverse; 2nd covering nearly all the remainder of the abdomen, slightly broadening towards apex; following segments very short and transverse. Ovipositor slightly protruding.

♂. Antennae longer, with 12 joints: pedicel not much longer than broad; all flagellum joints short, rounded, the first ones slightly longer than broad, the last ones slightly broader than long, except the 12th which is twice as long as the preceding; 5th joint sometimes more or less excavate and curved. Abdomen short, more or less rounded, not longer than the thorax. For the rest similar to the female.

Length: ♀♂ 0·5 mm.

JAVA: Buitenzorg, 18 ♀, 23 ♂, 1930 (*R. W. Paine*).

Host. Eggs of *Tirathaba* sp.

Other specimens, on a microscope slide, received from FIJI as parasites of *Tirathaba*, labelled "From vulu," are similar but a little larger, and are believed to belong to the same species.

Three other *Telenomus* spp. are already known from Java, described by Dodd (1914, Arch. Naturg., **80** (A) 5: 163), all bred from eggs of small moths in relation with sugar-cane.

T. javensis, Dodd, is larger (0·9 mm.) with darker antennae and legs: antennae with joints 4–6 small, transverse, club with 5 joints.

T. vandergooti, Dodd, has golden-yellow legs and scape, 3rd antennal joint longer than broad, the following gradually decreasing in length, and the thorax and abdomen more elongate.

T. spodopterae, Dodd, has the antennal joints 3–6 very small and much

narrower than the 2nd, the wings narrower with the marginal ciliae about half as long as the breadth of the wing and the abdomen more elongate.

Microphanurus painei, sp. n.

♀♂. Body black. Antennae of female with the radicle black, the scape and joints 2 to 4 yellow, 5 and 6 brown, 7 to 11 (club) black. Antennae of male yellow, 4 or 5 last joints brown. Legs clear yellow, coxae black. Wing nervature pale yellow.

♀. Head much transverse, very little broader than the thorax, finely rugulose, dull. Vertex broad, the ocelli forming a large and low triangle; lateral ocelli situated very near the eye-margin, but without touching them; front ocellus at the upper part of a small, rounded excavation. Eyes almost rounded, glabrous. Face irregularly transversely carinate. Antennal furrows not developed. Cheeks a little longer than half the diameter of an eye, with a curved furrow between the eye and the mandibles; behind this furrow and the base of the eye is a row of oblique striae. Mandibles large, curved, with 3 strong and pointed teeth. Antennae inserted near the mouth, with 11 joints; radicel narrow and long, as long as $\frac{1}{3}$ of the scape; scape elongate, reaching the level of the front ocellus; pedicel narrower than the scape, twice as long as its apical breadth; 3rd joint a little longer than the pedicel; 4th shorter, as long as $\frac{4}{5}$ of the 3rd; 5th shorter and a little broader, subquadrate; 6th still slightly broader, a little transverse, cupuliform; 7th to 10th thick, $1\frac{1}{2}$ broader than the 3rd, subquadrate; 11th triangular; the club has thus 6 joints.

Thorax short, rounded, a little broader than long and, seen from the side, as high as long. Pronotum very short, scarcely visible except near the sides. Mesonotum and scutellum reticulated, dull. Postscutellum with a row of punctation. Propodeon concave in the middle, hidden beneath the postscutellum; convex on the sides with longitudinal and smaller transversal carinae. Mesopleurae with strong longitudinal furrows. Legs relatively short, weak, the tarsi narrow and longer than the tibiae. Wings hyaline, with the stigmal vein narrow and long, thrice or more longer than the marginal; postmarginal vein longer than the stigmal.

Abdomen small, shorter and narrower than the thorax, depressed, rounded, quite smooth, with striae at the base of the 1st tergite, a row of points between the 1st and the 2nd tergites, and some weak striae on the middle base of the 2nd tergite; 2nd segment the longest, although broader than long, the following joints very short and transverse. Ovipositor sometimes a little protruding.

♂. Quite similar to the female, from which it differs only by the form of the antennae. They have 12 joints, a long radicle, the scape shorter than in the female, pedicel narrower than the scape, about twice as long as broad; 3rd joint almost $1\frac{1}{2}$ longer than the pedicel; 4th a little shorter than the 3rd; 5th still a little shorter, as long as the pedicel; the following joints gradually narrower, slightly longer than broad, the last joint more elongate, narrow.

Length: ♀♂ 1·2–1·3 mm.

Solomon Isl.: Gavutu, 15 ♀, 7 ♂, ix.1928 (*R. W. Paine*); Guadalcanal, 2 ♀, ix.1931 (*R. J. A. Lever*).

Host. Eggs of *Axiagaster cambelli*, Dist.

This species seems to be related to *M. girault*i, Dodd, from the Fiji Islands; but Dodd's species is smaller (0·8 mm.), has the head and thorax more finely sculptured, the antennae brown, the legs entirely clear yellow, with only the anterior coxae black and the abdomen brownish, a little longer than the thorax. *M. catacanthae*, Ashmead, from the Philippine Islands, another parasite of a Pentatomid, differs specially by the sculpture of the thorax, where the mesonotum is very finely punctate and the scutellum quite smooth.

NEUE LIMACODIDEN (LEP.)

Von Prof. Dr. Martin Hering.
(*Zoologisches Staatsmuseum, Berlin.*)

In einer mir vom Imperial Institute of Entomology in London zugegangenen Determinationssendung fanden sich die nachfolgend beschriebenen neuen Arten von Limacodiden. Die Typen der neuen Arten befinden sich im Imperial Institute of Entomology. Dem Director des Institutes, Sir Guy Marshall, spreche ich auch hiermit meinen verbindlichsten Dank für die Ueberlassung zur Bearbeitung aus.

1. **Miresa gliricidiae,** sp. n.

Die Art steht strukturell am nächsten *M. gracilis*, Btlr., von Madagascar, nur ist die *sc* im Hinterflügel ziemlich grade, bei der verglichenen Art stark gebogen. Habituell ist die neue Art von *M. gracilis*, Btlr., sogleich durch die gelblichen Hinterflügel zu unterscheiden, die beim Weibchen der verglichenen Art rosabraun sind, wenig heller als die Vorderflügel. Die beiden Querlinien im Vorderflügel sind weiter voneinander entfernt und divergieren unterhalb der Zelle gegen den Hinterrand, beide Querlinien sind auch bei der neuen Art dunkler und schärfer abgehoben.

Körper ockergelblich, vorn in Violettbraun übergehend, Behaarung der Beine braunviolett, die beiden letzten Tarsenglieder aber vorherrschend leuchtend ockergelb. Vorderflügel hell bräunlich, etwas violettbraun getönt, so hell aber nur im Mittelfeld. Die Wurzelhälfte ist im Vorderrandsteile bis zum Zellhinterrande braunviolett, von da bis zum Innenrande allmählich aufgehellt. Das Saumfeld distal von der Querlinie ist ebenfalls, wenngleich schwächer, violettbraun getönt. Die innere Querlinie geht von $\frac{2}{3}$ des Vorderrandes schräg und grade zum Hinterrande der Zelle, ist dann wurzelwärts verschoben und geht von da nach $\frac{1}{3}$ des Innenrandes. Die äussere Querlinie beginnt bei $\frac{4}{5}$ des Vorderrandes, biegt zuerst etwas nach aussen, und geht dann schliesslich fast parallel dem Saum nach $\frac{2}{3}$ des Innenrandes. Beide Querlinien fein braunviolett, die äussere stärker, die innere undeutlicher. Hinterflügel hell ockergelb, so auch die Unterseite, letztere am Vorderrande der Vorderflügel violettbraun, am Apex am breitesten. Vorderflügellänge 14 mm.

♀-Type von Sierra Leone : Njala, von *Gliricidia maculata* (*E. Hargreaves*), ii.1932.

2. **Parasa semiochracea,** sp. n.

Die neue Art steht am nächsten *P. vivida*, Wlkr., sogleich aber dadurch zu unterscheiden, dass die innere Begrenzung des braunen Saumfeldes im unteren Teile nicht gleichmässig gerundet ist, sondern zwischen m_1 und cu_2 sanft gerundet wurzelwärts vorspringt; deshalb ist auch Saumband bei cu_1 am breitesten, bei *P. vivida*, Wlkr., am Apex am breitesten. Bei *P. vivida*, Wlkr., ist der ganze Thorax oben grün, bei der neuen Art ist er hinten und an den Enden der Tegulae braun gerandet.

Körper graubraun, stellenweise in Ockergelb übergehend, Stirn und Oberseite des Thorax schön grün, am Ende des Thorax und der Tegulae allmählich in Violettbraun übergehend. Vorderflügel trüb grün, das Wurzelfeld violettbraun, am Vorderrand $\frac{1}{5}$ desselben breit, zwischen Zellhinterrand und Innenrand saumwärts in einen kurzen Zahn vorspringend; der obere Teil der Begrenzung nicht so schräg wie bei der Walker'schen Art. Das Saumfeld violettbraun, etwas weisslich bereift, die Adern kaum dunkler, im Durch-

schnitt etwas breiter als bei der verglichenen Art. Die proximale Begrenzung des Saumfeldes beginnt etwas näher dem Apex als bei *P. vivida*, Wlkr., ist dann schwach saumwärts gebogen, springt aber zwischen m_1 und cu_2 schwach wurzelwärts vor, so dass das Saumband deshalb hier am breitesten ist. Hinterflügel ockergelb, mit violettschwärzlichem Saumband, das zwischen m_2 und cu_2 stark wurzelwärts vorspringt, dort sich der Zelle bis über $\frac{1}{2}$ der Ader cu_1 nähert. Unterseite der Vorderflügel mit den Zeichnungen der Oberseite, aber schwächer, das Wurzelfeld nur am Vorderrande deutlich. Hinterflügel ockergelb. Vorderflügellänge 17 mm.

♀-Type von Sierra Leone: Njala (*E. Hargreaves*), iv.1932.

3. **Iragoides pseudocurvistriga,** sp. n.

Diese Art ist äusserst ähnlich *Thosea curvistriga*, m., durch die einreihig gekämmten Fühler des Männchens aber leicht zu unterscheiden, auch mündet die Schräglinie im Vorderflügel etwas jenseits der Innenrandmitte, bei der *Thosea*-Art aber auf oder vor der Innenrandmitte. Die Färbung der Vorderflügel ist etwas heller und lässt die violettbraunen Töne von *Th. curvistriga*, m., vermissen.

Erklärung der Abbildungen.

Figs. 1–4.

1. *Iragoides pseudocurvistriga*, Her. ♂-Type; 2. *Iragoides pseudocurvistriga*, Her. ♀-Type; 3. *Parasa semiochracea*, Her. ♀-Type; 4. *Miresa gliricidiae*, Her. ♀-Type.

Körper ockerbräunlich, Vorderflügel hellbraun, mit einer dunkelbraunen, etwas gebogenen Schräglinie, die kurz vor dem Apex beginnt, dann, sehr schwach nach aussen konvex, nach dem Innenrande geht, hinter dessen Mitte sie mündet. Sie ist wurzelwärts von einer ebenso breiten Linie begleitet, die etwas blasser als die Grundfarbe des Flügels ist. Fransen durch eine dunkle Linie geteilt, die bei der verglichenen *Thosea* fehlt. Hinterflügel grau, ohne rötliche Tönung. Unterseite einfarbig ockergrau, mit spärlichen schwarzen Schuppen bestreut. Vorderflügellänge 11 (♂)–14 (♀) mm.

♂-, ♀-Type von Malay Peninsula: Kedah, 4.vi.32. No. 8654.

DESCRIPTION D'UNE NOUVELLE ESPÈCE DU GENRE *POLYZONUS*, CAST. (COL., CERAMBYCIDAE)

Par N. N. Plavilstshikov.
(*Moscou.*)

Polyzonus violaceus, sp. n.

Capite obscure-cyaneo, pro parte violaceo et viride maculato; pronoto cyaneo, disco maculis duabus obscure violaceis, lateribus viridescentibus; scutello obscure-cyaneo; elytris violaceis; antennis obscure-brunneis, articulo primo nigro; pedibus nigris; pectore abdomineque viridis, prosterno obscure-violaceo, meso- et metasterno abdomineque subtiliter argenteo-griseo pubescentibus; antennis pedibusque breve brunneo pubescentibus. Capite satis nitido; fronte forte irregulariterque sed non dense punctato; clypeo transversim plicato, in parte anteriori rugoso-punctato; vertice grosse ruguloso et punctato. Antennis ♂ apice elytrorum articulis duabus ultimis superantibus, articulo primo forte sed non dense punctato, articulis 6°–9° apice distincte productis. Prothorace latitudinem suam distincte longiore, tuberculo laterali modice evoluto, ante basin distincte constricto et grosse rugoso, post apicem regulariter transversim plicato; disco dense et satis subtiliter ruguloso, pro parte subtransversim ruguloso, medio subnitido, lateribus subregulariter transversim ruguloso aut plicato, tuberculo laterali ad basin forte, ad apicem subtiliter punctato. Scutello apice rotundato, longitudinaliter sulcato, ruguloso punctato. Elytris subtiliter denseque ruguloso punctatis, subopacis, subtiliter breveque aenescente-brunneo pubescentibus. Prosterno dense ruguloso-punctato, meso- et metasterno abdomineque subtilissime punctulatis, nitidis. Articulo primo tarsorum posticorum articulis secundo tertioque summa captis longiore. Abdomine in mas segmento 5° apice late profundeque exciso, segmento 6° medio profunde sed anguste exciso.

Long. corp. 22–24 mm., lat. ad hum. 4·2–4·4 mm.

Habitat. China mer., Yunnan (*Dr. Staudinger* olim leg., coll. mea).

Appartient au groupe des espèces avec les élytres unicolorés, sans macules ou bandes jaunes. Tête d'un bleu obscur, avec des reflets violacés et d'un vert obscur; pronotum bleu, avec deux macules violacées sur le disque, un peu verdâtre sur ses côtés; l'écusson d'un bleu obscur; élytres violacés, plus ou moins bleuâtres vers l'écusson; antennes d'un brun obscur avec le premier article noir; pieds noirs; dessous du corps vert, prosternum d'un violacé obscur, meso- et metasternum et l'abdomen avec une pubesce fine et courte d'un gris argenté. Tête assez brillante, front fortément et irrégulièrement ponctué, clypeus transversalement plissé, ruguesement ponctué dans sa partie antérieure, vertex grossement ponctué et rugueux. Antennes chez le mâle un peu plus longues que les élytres (dépassant les élytres par ses deux derniers articles), premier article fortement mais éparsement ponctué, 6me–9me articles anguleusement prolongés sur son sommet. Pronotum distinctement plus long que large au milieu, armé d'une tubercule latérale assez grande mais émoussée, avec une constriction prébasale, grossement ruguleuse, régulièrement plié transversalement près du sommet, densement et finement, en partie plus ou moins transversalement, rugueux sur son disque, un peu brillant long le milieu (ou il est sculpté un peu plus grossement), subopaque sur ses côtes; près des tubercules grossement ponctué, presque glabre dans son angle apical; tubercule latérale fortement ponctué vers sa base et finement ponctué sur son sommet. Ecusson en triangle allongé, arrondi au sommet, silonné long son milieu, rugueusement ponctué, modérement brillant. Elytres finement et densement rugueusement ponctués, subopaques, un peu plus brillants long la suture dans son tiers

premier et près de l'écusson, finement et éparsement pubescents (près du sommet la pubescence est beaucoup plus distincte). Prosternum densement et rugueusement ponctué, meso- et metasternum et l'abdomen très finement et très densement ponctués, brillants. Femora postérieurs ches le mâle assez longs, atteignant le sommet des élytres, densement et finement ponctués, femurs antérieurs plus éparsement ponctués, plus brillants. Premier article des tarses postérieurs plus long que le 2me et 3me articles reunis et presque aussi long que les 2me, 3me et 4me articles reunis. Abdomen chez le mâle avec le 5me segment largement et profondement échancré au sommet, le 6me segment profondement mais étroitement sinueusement échancré dans le milieu de son bord postérieur.

On peut distinguer cette espèce nouvelle d'après la courte tabelle suivante :—

1(2). Pronotum finement et densement ponctué sur le disque
P. subtruncatus, H. W. Bates, 1879.

2(1). Pronotum non simplement ponctué sur le disque mais plus ou moins densement rugueusement ponctué ou grossement rugueux.

3(6). 6me segment abdominal plus ou moins profondement mais simplement échancré au sommet, 5me segment plus ou moins largement échancré au sommet. Dessus du corps distinctement brillant, parfois très brillant, métallique.

4(5). Antennes avec les articles très faiblement prolongés anguleusement sur son sommet, 8me article un peu plus épais que le 1er article. Antennes chez le mâle un peu plus longues, ches la femelle un peu plus courtes que le corps. 5me segment abdominal chez le mâle très profondement échancré, 6me segment presque sans échancrure *P. prasinus*, White, 1853.

5(4). 8me et 9me articles des antennes (au moins chez le mâle) distinctement prolongés anguleusement (chez le *P. prasinus* faiblement prolongés), 8me article et les suivants légèrement épais, 1er article le plus épais des autres. Antennes chez le mâle distinctement plus longues que le corps. 5me segment abdominal chez le mâle largement mais non profondement échancré au sommet, 6me segment presque sans échancrure. Corps métallique, élytres très brillants
P. cuprarius, Fairm., 1887.

6(3). 5me segment abdominal chez le mâle très largement et très profondement (presque jusq'au milieu) échancré au sommet, 6me segment très profondement mais angustement échancré au milieu. Dessus du corps subopaque . . . . . *P. violaceus*, Plav., 1933.

A REMARKABLE ANTHOMYZID FROM NEW ZEALAND (DIPTERA)

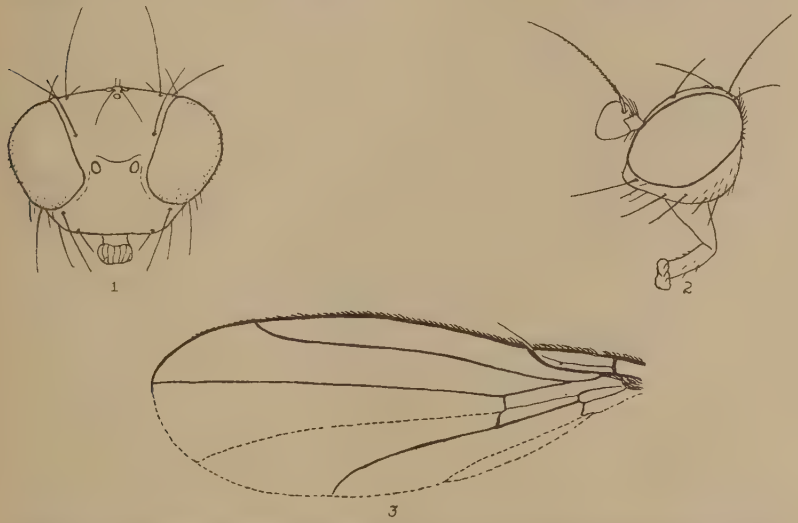
By John R. Malloch.

(*Washington, D.C.*)

The remarkable fly described below belongs, in my opinion, to the family Anthomyzidae, though in some respects it does not agree very well with the definition of that group. I propose to erect a new genus for it.

Teratomyza, gen. n.

The general features of the head and wings are shown in the accompanying illustrations. The vibrissal angle is undeveloped and the largest of the bristles near that part of the head is obviously not the vibrissa as it is situated too close to the eye-margin; the smaller bristle situated below the level of the large one and nearer to the median line may reasonably be accepted as the vibrissa (fig. 1). The eyes are densely short-haired as in



Figs. 1–3.—*Teratomyza neozelandica*, gen. et sp. n.: fig. 1, head from in front, antennae removed; fig. 2, head in profile; fig. 3, wing.

many Drosophilidae, there is but one pair of orbitals present which are recurved, the ocellars are long and proclinate, the outer vertical pair of bristles is about half as long as the inner pair, there is a minute pair of parallel bristles behind the ocelli which appear to represent the postverticals, and there is a pair of larger bristles which are incurved and situated slightly below the edge of the vertex and almost in line with the inner verticals. Arista microscopically pubescent. Palpi lacking. Thorax with the following bristles: dorso-centrals 2 strong pairs, the anterior close to suture; humeral lacking; notopleurals 2; presutural 1; sternopleural 1; scutellar 2; and one bristle on the angle above base of wing that may be classed either as a supra-alar or postalar. There is sometimes a weaker setula in front of the sternopleural, the mesopleura and prosternum are bare, and there

is no trace of a propleural bristle. Tibiae without a preapical dorsal bristle. Wing-venation as fig. 3.

Genotype, the following species.

Teratomyza neozelandica, gen. et sp. n.

♂. Shining brownish-testaceous, yellowish below, darker above, with the apex of the abdomen sometimes black, the face and jowls always yellow, the frons brown and sometimes with a slight metallic bluish tinge. Legs entirely testaceous yellow. Wings brownish-hyaline, veins brown, fourth and sixth much weaker than the others. Halteres brownish-yellow.

Head in profile as fig. 2, the third antennal segment slightly truncate at apex, with dense short down, second segment triangularly produced on each side; frons wider at vertex than in front (fig. 1), the surface shining, but under a very high magnification seen to be rather densely covered with microscopic erect pile, the orbits not differentiated; hairs on eyes very fine. Mesonotum with very short decumbent hairs anteriorly, and a few similar hairs on the scutellum. Abdomen subcylindrical, narrow, fully as long as the thorax, the hypopygium not conspicuous. Legs of normal structure, fore coxae with some black setulose hairs in front, fore femur with four or five postero-ventral bristles, one just beyond the middle longer than the others. Wings fully as long as the entire insect, the venation as in fig. 3, cross-veins closely approximated and a little beyond the level of apex of the first vein, sixth vein complete, a fine and quite long bristle on costa at apex of first vein.

Length, 2·75 mm.

Type, Lake Moana, 16–21.xii.1925. Paratypes, Lake Brunner, 5.ii.1922, without antennae; and Nelson, 9.x.1923.

Type to be returned to Cawthron Institute, paratype to be deposited in the British Museum, and one returned to Dr. A. Tonnoir, who collected the material and submitted it for identification.*

The remarkable wing-venation, lack of a definite vibrissal angle and of well-distinguished vibrissa and palpi, rank this genus as an outstanding one in the family. The recognition of families in the Acalyptratae, which is difficult even in the Palearctic Region, becomes increasingly a matter of opinion in tropical countries, and in Australia, New Zealand, and the Patagonian Region in some cases almost an impossibility to accomplish satisfactorily. I believe in the present instance that I am correct in my allocation, though the family Anthomyzidae belongs to a section in which the distinguishing criteria have never been satisfactorily defined and are more a matter of personal opinion than elsewhere in the order.

* Several specimens of this species were collected by Mr. T. R. Harris at Ihakune, North Island, New Zealand, in 1922–3, and are now in the British Museum. Two other species of the genus occur in Patagonia, a fact unknown to the author when this paper was written; they will shortly be described by him in a report upon the Acalyptrata collected by the British Museum expedition to Patagonia in 1926.—F. W. Edwards.

NEW SPECIES OF INDIAN GRYLLIDAE (ORTH.)

By L. Chopard.

Tridactylus saussurei, sp. n.

Extremely close to *T. brunneri*, Sauss., of which it has the shape, general habitus and flattened anal processes; the tibial lamellae are small and the abdominal end is quite

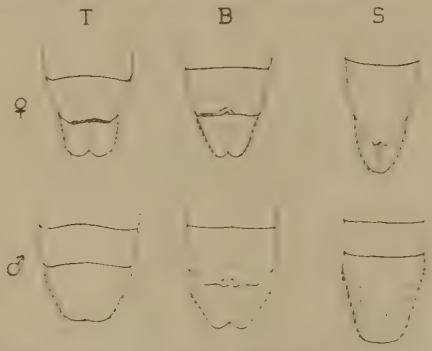


Fig. 1.—Subgenital plate, ♂ and ♀, of *Tridactylus thoracicus* Guér. (T.), *T. brunneri*, Sauss. (B.), and *T. saussurei*, sp. n. (S.).

different. In the male, the genital plate is large, lengthened, truncated at apex; in the female, it is large, with somewhat sinuated sides and apex feebly notched (fig. 1).—Length of body 8·5 mm.

Types: Bengal: Chapra, 1 ♂, Pusa, 1 ♀.

Gryllopsis robustus, sp. n.

Large and stout species, wholly apterous, uniformly rufous brown. *Head* as wide as pronotum, globular, shining brown; ocelli surrounded with yellow. *Palpi* yellowish; antennae brown. *Pronotum* transverse, with anterior margin straight, posterior one feebly concave, sides somewhat convex, so that the disc is slightly narrowed anteriorly and posteriorly; disc convex, brownish, pubescent; lateral lobes concolorous, with inferior margin slightly ascending posteriorly. Mesonotum very short, brown with 6 small rufous spots along the posterior margin. Metanotum similar to the abdominal tergites. *Abdomen* stout, nearly cylindrical, rufous brown, covered with a brown pubescence; below yellowish. *Ovipositor* rather short, slender, with small, lanceolate apical valves. *Legs* rufous, pubescent; anterior tibiae perforated at their external face with a rather large tympanum in the shape of a long oval. Posterior femora very thick; tibiae armed with 6 rather strong spines on each margin; superior and median internal apical spurs subequal in length; metatarsi compressed, presenting 2 rows of 7–9 strong, blackish denticles.—Length of body 21 mm.; pronotum, 4·5 mm.; width of pronotum, 6 mm.; post. fem., 12 mm.; post. tib., 8·5 mm.; ovipositor 13 mm.

Type: Kamoakkan hill, Chingiapat distr. (*F. H. Gravely*). 28–31.viii.22, 1 ♀.

This species is rather close to *G. furcatus*, Sauss., the female of which is also completely apterous; it is a little smaller; with wholly brown head, rufous abdomen and legs, pronotum slightly narrowed in front, ovipositor more slender with narrow and arcuated apical valves.

Cophogryllus brevipes, sp. n. (Fig. 2.)

Small, blackish-brown. *Head* as wide as pronotum, entirely black; occiput slightly convex, forehead sloping, frontal rostrum wide; face somewhat rufous, rather strongly convex. *Palpi* brownish, rather short; 4th joint of the maxillary palpi equalling the 3rd, 5th a little longer, somewhat dilated at apex. *Antennae* brownish. Pronotum transverse, with anterior and posterior margins feebly concave, sides a little convex; lateral lobes with inferior margin slightly ascending backwards. *Abdomen* slightly narrowed at base,

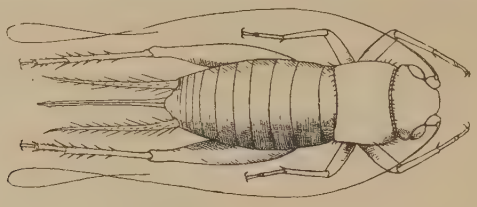


Fig. 2.—*Cophogryllus brevipes*, sp. n. ♀.

brown above, finely pubescent, rufous beneath. *Ovipositor* short, straight, with narrow apical valves; the superior ones acute, longer than the inferior ones. *Legs* brown, short, chiefly the anterior and median ones; anterior tibiae a little shorter than the femora, scarcely longer than the tarsi. Posterior femora thick, yellowish-brown, darkened at apex and somewhat striated at their external face; tibiae short, armed with 4 spines on each margin; metatarsi with denticulated margins, the denticles strong, nearly spiniform.

Length of body 7 mm.; pronotum 1·6 mm.; ant. fem. 1·5 mm.; ant. tib. 1·4 mm.; post. fem. 4·5 mm.; ovipositor 4 mm.

Type: Nilgiris: Ootacamund, 6700–8000 ft. (*F. H. Gravely*), 20–30.v.21, 1 ♀.

This small species is very close to *C. niger*, Chop., from Sarawak; it differs from it by shorter anterior and median legs and also by its abdomen which is not so strongly narrowed at base.

Homaloblemmus cavifrons, sp. n.

Rather large and stout, rufo-testaceous. *Head* as wide as pronotum, rufous; forehead a little darkened; frontal protuberance wide, rounded, projecting between the antennae; face rufous with a light band beneath each eye; facial shield deeply excavated under the protuberance (fig. 3). Lateral ocelli whitish, united by a V-shaped line; anterior ocellus at apex of the protuberance. *Palpi* whitish; 4th joint of the maxillary palpi nearly

Fig. 3.—Head and pronotum of *Homaloblemmus cavifrons*, sp. n.

equalling the 3rd in length. *Pronotum* transverse, very slightly widening in front, with anterior and posterior margins straight; disc rufous with a few small brown spots; lateral lobes with inferior margin slightly ascending backwards, their inferior part whitish, the superior one presenting an irregular brown band. *Abdomen* yellowish-brown. Legs

yellowish spotted with brown; anterior tibiae with a large external tympanum. Posterior femora thick, a little striated with brown at their external face; tibiae bearing 5 internal, 6 external, spines; supero-internal apical spur a little shorter than the median one; metatarsi serrulated on both their superior margins. *Elytra* rufo-testaceous, extending to the base of the 6th abdominal tergite, truncated at apex; speculum nearly as wide as long, rounded posteriorly, divided by a much arcuated vein; 2 oblique veins; apical field very short, presenting 2 rows of irregular cells; lateral field brown along the humeral vein, almost transparent beneath, presenting 4 plain, regular veins.

Length of body 19 mm.; pronotum 4 mm.; post. fem. 12·5 mm.; elytra 8·7 mm.

Type: Madras (*F. H. Gravely*), viii.1925, 1 ♂.

This species is quite remarkable by the shape of its head.

Pteronemobius montanus, sp. n.

Very small, brown. *Head* large, as wide as pronotum, light brown, with feebly marked dark bands on the occiput. *Palpi* testaceous, with darker last joint. *Pronotum* transverse with anterior and posterior margins straight, parallel sides; disc testaceous brown, with long black bristles; lateral lobes brown. *Abdomen* brown above, yellowish beneath. *Ovipositor* rather long, rather slender, with apical valves long, narrow, very feebly denticulated. *Legs* brown; posterior femora obliquely striated at their external face; posterior tibiae armed with 4 internal, 3 external, spines, the 1st internal very small; apical spurs long, the 2 inferior ones unequal in length. *Elytra* extending nearly to the apex of abdomen, brown, shining; dorsal field with 4 rather regular, nearly parallel veins; transverse veinlets very scarce and feebly marked; lateral field high, with 4 plain, regularly distant veins. *Wings* short.

Length of body 4 mm.; post. fem. 3·2 mm.; elytra 2 mm.; ovipositor 2 mm.

Type: Sikkim: Kelimpong (4000 ft.), Everest expedition (*Maj. R. W. G. Hingston*), 27.iii.24, 1 ♀.

This species looks much like a very small *P. heydeni*, Fisch., but it differs from it by the posterior tibiae bearing 3 external spines only.

Sphecogryllus,* gen. n.

A genus of the group Brachytrypites remarkable for the abdomen being strongly narrowed at base and the pronotum very wide in front so that the general habitus is rather that of a *Stenopelmatus*; the legs are very short with thickened anterior tibiae, perforated at their external face only; the elytra are reduced to small lobes.

This insect very probably has fossorial habits.

Type: *Sphecogryllus armatus*, sp. n.

Sphecogryllus armatus, sp. n. (Fig. 4.)

Rather small, rufous. *Head* large, rounded; frontal rostrum wide; face short; mandibles strong, the right one presenting a curious deformation (which is perhaps an abnormality) consisting of the presence of a deep depression along the basal margin, the lip of this depression ending in a rather strong tooth in the angle of the clypeus. *Palpi* rather short, testaceous. *Antennae* short and slender. *Eyes* small, their convexity forming no projection on the convexity of the head; ocelli disposed nearly on a straight line. *Pronotum* very

* σφήξ-ηκός, wasp.

strongly widening in front, with much concave anterior margin; disc feebly convex, shining; lateral lobes with inferior margin straight. *Abdomen* narrow at base, shining brown above, lighter beneath; subgenital plate small; cerci rather short. *Ovipositor* short, straight,

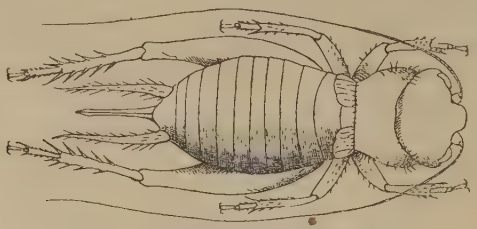


Fig. 4.—*Sphecogryllus armatus*, sp. n. ♀.

with acute apical valves, the superior ones longer than the inferior ones. *Legs* short, rufous; anterior tibiae very short, thickened at apex, presenting a large, oval, external tympanum, and armed at apex with 3 strong spurs which are longer than the metatarsus; this is also very short, and its external face is armed, as well as the extremity of the tibia, with small spines. Median tibiae armed with 4 strong apical spurs; metatarsi furnished with small spines similar to those of the anterior one. Posterior femora thick; tibiae short, armed with 4 strong spines on each margin; apical spurs also very strong, the two large internal ones subequal in length; metatarsi short and thick, armed with 6 strong denticles on each margin, their apical spurs short, strong, the internal one extending nearly to the apex of the 3rd joint. *Elytra* very short, in the shape of a rounded lobe, yellowish with 4 or 5 feebly marked veins.

Length of body 14 mm.; pronotum 2·5 mm.; post. fem. 7·5 mm.; post. tib. 4 mm.; ovipositor 5 mm.; elytra 1 mm.

Type: S. Malabar: Dhoni forest, 1500–4000 ft. (*E. Barner*), 17–26.v.24, 1 ♀.

Scleropterus variolosus, sp. n. (Fig. 5.)

Very close to *S. coriaceus* but smaller. *Head* and *pronotum* as in the aforesaid species; *antennae* black with a wide yellow ring a little beyond the base. *Abdomen* black. *Legs*, anterior and median femora blackish-brown; tibiae testaceous, the anterior ones perforated on both faces. Posterior femora shorter and thicker than in *coriaceus*, blackish with yellowish apex; posterior tibiae yellowish with external margin rather finely and densely

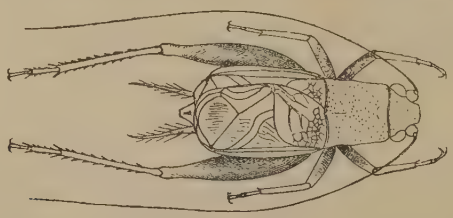


Fig. 5.—*Scleropterus variolosus*, sp. n. ♂.

serrulated, internal margin bearing 6 distant spines. *Elytra* smoky, scarcely extending to the apex of abdomen; speculum transverse, non-divided, presenting forwards a right angle, the antero-external side much longer than the antero-internal one, posterior part

rounded; 2 oblique veins only; chords and anal field as in *coriaceus*; apical field reduced to the wrapping vein; lateral field black, presenting 4 veins which are more regularly distant than in *coriaceus*. *Wings* short.

Length of body 7·5 mm.; post. fem. 4 mm.; elytra 4·5 mm.

Type: Belgachia, Pusa coll., P. G. P. 1907, 1 ♂.

This species differs from others of the genus in having the elytral speculum non-divided, and in having only 2 oblique veins as compared with 6 in *coriaceus* and 3 in *punctatus*.

Aspidogryllus,* gen. n.

This genus belongs to the PHALANGOPSINAE and is close to *Arachnominus*, Sauss.; it is quite remarkable for the extraordinary shape of the first abdominal tergites as described below.

Type: *Aspidogryllus singularis*, sp. n.

Aspidogryllus singularis, sp. n. (Fig. 6.)

Small, apterous; fulvous varied with brown. *Head* as wide as pronotum; forehead strongly convex, short; frontal rostrum wide, furnished with brown bristles; face shining, rufous. *Palpi* moderately long, brownish, 5th joint equalling the 3rd, 5th a little longer, with superior margin a little concave, enlarged at apex. Eyes small, as long as the first antennal joint; ocelli scarcely visible. *Antennae* rufous. *Pronotum* wide, with anterior and posterior margins straight; disc convex, rufous with a narrow brown band along the posterior margin; lateral lobes concolorous, somewhat widening and projecting externally with inferior margin ascending backwards. *Mesonotum* very short, brown. *Metanotum*

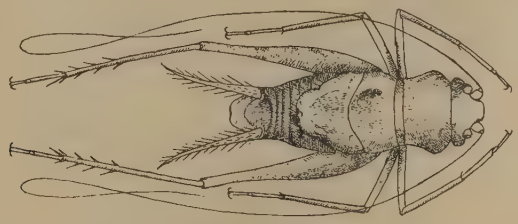


FIG. 6.—*Aspidogryllus singularis*, sp. n. ♂.

large, widely rounded posteriorly, furnished with an abundant pubescence and somewhat hollowed on the disc in the shape of a small cup. First abdominal tergite very large and prolonged above the other tergites in the shape of a triangular shield; this shield is pubescent and provided laterally with lamellar expansions, the apex forming a small hook; the other abdominal tergites are regular, narrowly margined with brown; supero-anal valve pentagonal. *Abdomen* yellowish below; subgenital plate large, rounded; genitalia projecting, partly membranaceous. Cerci rather long. *Legs* long, rufous, pubescent. Anterior tibiae non-perforated; anterior and median metatarsi very long. Posterior femora moderately long, their apical linear part short, their external face adorned with feebly marked brown bands; posterior tibiae armed with 4 spines on each margin, non-serrulated between the spines, the external spines a little longer than the internal ones; superior and median internal spurs long, the superior a little longer than the median one; supero-external spur longer than the median one; metatarsus extremely long, rounded.

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* ἀσπίς-ίδος, shield.

Length of body 7·5 mm.; pronotum 1·5 mm.; mesonotum 1·4 mm.; 1st abd. tergite 1·5 mm.; post. fem. 6·2 mm.

Type: Nilgiris: Ootacamund ca. 6700–8000 ft. (*F. H. Gravely*), 20–30.v.21, 1 ♂.

Loxoblemmus nigriceps, sp. n. (Fig. 7.)

Small, blackish. *Head* as wide as pronotum in front, black, shining above; forehead very wide, little projecting, with anterior margin a little convex and feebly rounded; face brown, shining, the facial shield feebly concave, smooth with a small projection on each side of the median ocellus which is in the middle of the shield. Maxillary palpi with brown base, 4th and 5th joints whitish, equalling the 3rd in length. *Antennae* brown with 1st

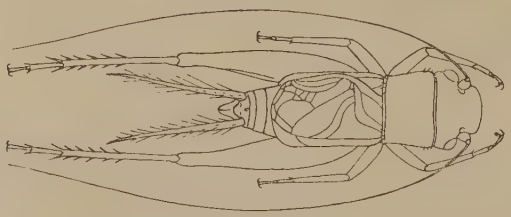


Fig. 7.—*Loxoblemmus nigriceps*, sp. n. ♂.

joint without process. Pronotum rather strongly widened in front; disc blackish with a yellowish, silky pubescence and long, rufous bristles; lateral lobes entirely black. *Abdomen* black. *Legs* rather short, rufo-testaceous, marbled with brown, pubescent; anterior tibiae perforated at their external face with a large tympanum, the internal one scarcely visible. Posterior femora thick, striated with brown; tibiae armed with 5 yellowish, rather slender spines on each margin; apical spurs rather long and slender. *Elytra* black, shining, a little shorter than the abdomen, speculum rather small, a little longer than wide, non-divided, but presenting a small cell in the internal angle; diagonal vein and chords nearly straight; 2 oblique veins; apical field extremely short; lateral field black, presenting 4 parallel veins, the 1st of which is very distant from the mediastinal vein.

Length of body 10 mm.; post. fem. 7 mm.; elytra 4·5 mm.

Type: Sikkim: Gantok, 5000 ft. (*Major R. W. G. Hingston*), 28.v.24, 1 ♂. Everest expedition (British Museum).

This species is close to *L. truncatus*, Br., from which it differs in its darker coloration, entirely black lateral lobes of the pronotum, 2 oblique veins instead of 3, frontal rostrum a little convex instead of being truncated.

ALEURODIDAE OF MALAYA

By G. H. Corbett, B.Sc., F.R.E.S.

(*Government Entomologist, Straits Settlements and Federated Malay States.*)

During recent years increasing interest, especially in the East, has been taken in the study of the Aleurodidae. In the present paper, ten new species from Malaya of the genus *Dialeurodes* have been described.

I wish to express my sincere thanks to Mr. K. Anthony, of the Department of Agriculture, S.S. & F.M.S., for the drawings used to illustrate this paper.

Dialeurodes cyathispinifera, sp. n.

Pupa case, undersurface of leaf, transparent, abdominal rhachis and ridges distinct: no secretion, length 0·80 mm., breadth 0·50 mm., elliptical, marginal sutures moderately evident. Tracheal pore opens within margin, fold not distinct. Just within margin a

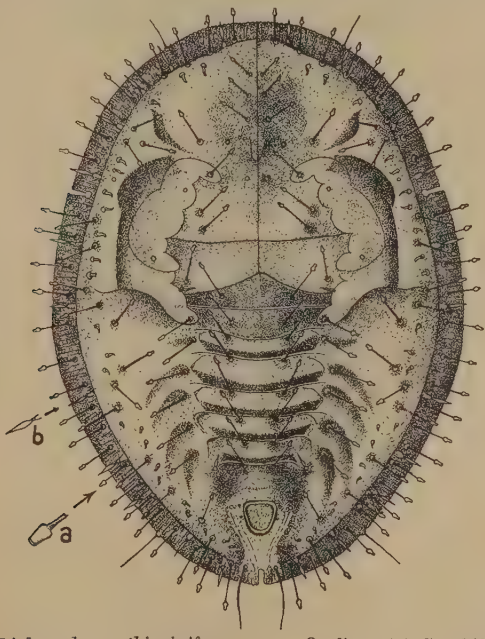


Fig. 1.—*Dialeurodes cyathispinifera*, sp. n. Outline; (*a*) Cyathiform spine; (*b*) Hastate spine.

ring of about twelve pairs of hastate spines, projecting just beyond margin, and twenty-seven pairs of cyathiform spines projecting well beyond margin. Submarginally another ring of cyathiform spines and a ring of short-pointed spines. Cyathiform spines prominent on subdorsal area, on cephalo-thorax and abdominal segments. Rhachis prominent, folds posteriorly directed into submarginal area.

Vasiform orifice subcordate, not armed with teeth and without apparent posterior projection. Operculum similarly shaped. Caudal fold evident. Caudal pore, if any, broken in the two representatives.

Collected on an unidentified plant, 11 March, 1930, Kuala Lumpur.

Dialeurodes selangorensis, sp. n.

Pupa case uppersurface of leaf, no wax secretion, dorsal disc black, rest fuscous, ridges deeper brown and prominent. Size varies, length 1·35 mm. to 1·75 mm., breadth 1·10 mm. to 1·61 mm. Transparent after clearing. Elliptical to subcircular in shape, slightly pointed anteriorly, dorsum with prominent rhachis, pyriform anteriorly; abdominal segments distinct. Case with seven pairs of prominent ridges, six reaching margin. Margin crenulate, slightly emarginate between terminations of ridges. About fifteen pairs of small

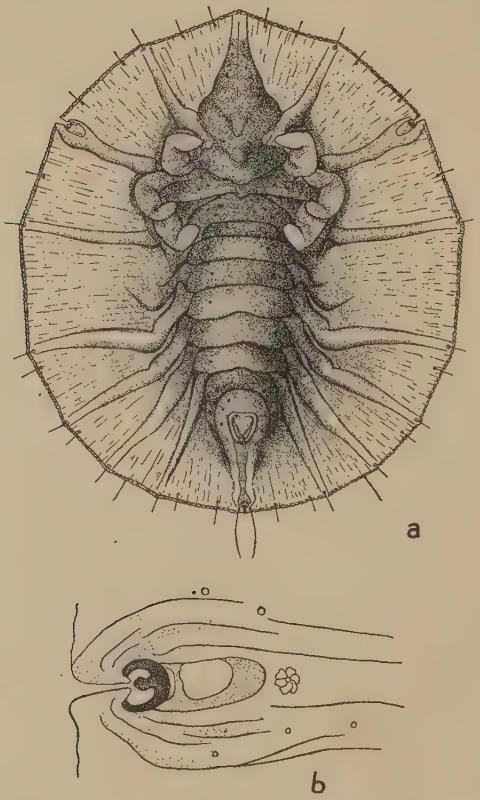


Fig. 2.—*Dialeurodes selangorensis,* sp. n. (*a*) Outline; (*b*) Tracheal pore and fold.

submarginal spines—one at termination of each ridge. Case scabrous, more conspicuous along dorsal ridges.

Tracheal pore within margin: internal margin armed with one prominent tooth and smaller sinuses, fold conspicuous whole length but without prominent markings.

Vasiform orifice subcordate, without teeth: distinct projection from inner posterior margin; operculum similarly shaped: lingula hidden: caudal fold dotted, ending in pore within margin; pore with sinuses. Area surrounding caudal fold and vasiform orifice conspicuously dotted.

Collected on *Cinnamomum camphora*, 16 May, 1927, Gardens Hill, Kuala Lumpur.

This species differs from *D. trilobitoides* in the absence of lateral vertical sutures in the cephalo-thorax and of marked brown pigmentation, also in shape and in ridges reaching margin.

Dialeurodes tridentifera, sp. n.

Pupa case on leaf unknown, elliptical, broadest across region of first abdominal segment, length 0·85 mm., breadth 0·59 mm. Margin crenulate. Ten pairs of small submarginal spines, four pairs anterior to thoracic pore; in addition a pair of spines on anterior and latero-posterior margin and a long pair near caudal pore. Sutures from margin inconspicuous: Dorsal disc surrounded by a ring of sutures and a ring of about eighteen pairs of strong spines. Small capitate spines are present in submarginal area.

Fig. 3.—*Dialeurodes tridentifera*, sp. n. (*a*) Outline; (*b*) Tracheal pore; (*c*) Trident structure.

Tracheal pore opens just within margin, internally three clear areas and adjacent a large oval-shaped area. Tracheal fold evident running towards a trident-shaped structure from dorsal disc. Middle projection of this structure pyriform. Six pairs of ridges run from rhachis to margin, case divided into sixteen areas. Abdominal segments distinct, rhachis with capitate spines and cone-shaped anteriorly.

Vasiform orifice subcordate without teeth, but with projection from inner posterior margin. Caudal fold conspicuous terminating in pore on margin. A differentiated spotted area surrounds vasiform orifice and caudal fold.

Described from a single specimen found when mounting other Aleurodids collected on *Cinnamomum camphora*, 16 May, 1927, Kuala Lumpur.

Dialeurodes shoreae, sp. n.

Pupa case undersurface of leaf, yellowish-brown without dorsal or lateral secretion, broadly elliptical, emarginated anteriorly on both sides of mid-thoracic suture and at terminations of transverse thoracic suture. Length 1·19 mm., breadth 0·94 mm. Margin entire with nine pairs of marginal spines; four pairs anterior to thoracic pore and five pairs posterior to transverse suture. Marginal sutures run to dorsal disc. Thoracic and caudal folds prominent, terminating in distinct pores. Transverse suture reaches margin and

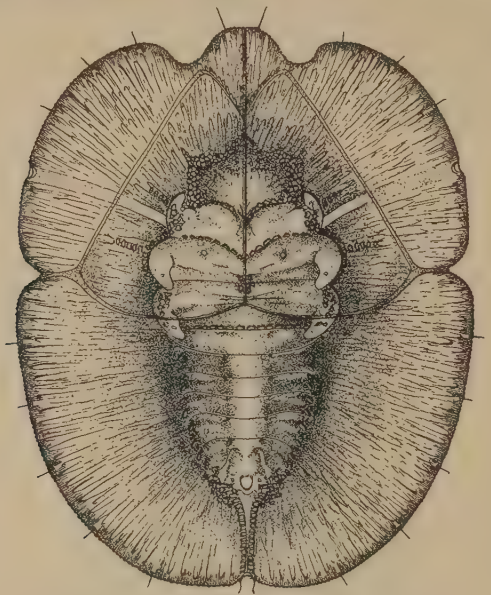


Fig. 4.—*Dialeurodes shoreae,* sp. n. Outline.

joined in submarginal area by two sutures running obliquely through cephalo-thorax. These oblique sutures near anterior margin of case turning posteriorly join mid-thoracic suture. Dorsal disc surrounded by irregularly shaped pores, more prominent at lateral margins of abdominal segments, the number to each abdominal segment varies in different specimens. Anterior to first and second thoracic and to first abdominal sutures pore-like markings prominent. Rectangular shaped markings, more conspicuous in some specimens, on each side of caudal fold. A pair of fine spines arm caudal pore. Small spines evident throughout case.

Vasiform orifice small in comparison to size of case, subcordate with operculum almost filling it and obscuring lingula.

Collected on *Shorea glauca*, 29 June, 1928, Juru Hill, Province Wellesley.

Dialeurodes punctata, sp. n.

Pupa case conspicuous, generally in considerable numbers, on undersurface of leaf, no secretion evident, yellowish, subcircular, length 1·82 mm., breadth 1·62 mm. Margin entire, incised by marginal sutures. Tracheal and caudal pores small, opening slightly within margin. Tracheal fold not evident, caudal fold indicated not conspicuous. In submarginal area, around case irregularly shaped conspicuous pore-like areas from which arise two small spines. Case has a ramified reticulation and numerous small inconspicuous

spines throughout dorsum. Abdominal more distinct than thoracic sutures. A pair of chitinised thickenings to each abdominal segment. The transverse suture, turning anteriorly, joins mid-thoracic suture enclosing a somewhat triangular area.

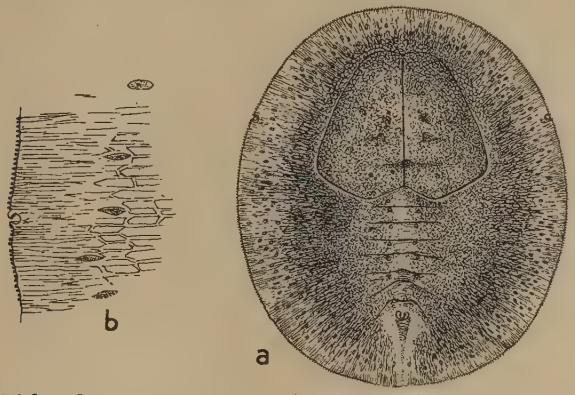


Fig. 5.—*Dialeurodes punctata*, sp. n. (*a*) Outline; (*b*) Marginal and submarginal area.

Fig. 6.—*Dialeurodes filamentosa*, sp. n.

Vasiform orifice not toothed, about as broad as long with a very small projection from inner posterior margin. Operculum subcordate and, in most specimens, fills orifice obscuring lingula.

Collected on an unidentified plant, 14 September, 1929, Kuala Lumpur.

Dialeurodes filamentosa, sp. n.

Pupa case on undersurface of leaf, yellowish, somewhat convex, without dorsal or lateral secretion, length 0·60 mm., breadth 0·40 mm. Margin finely crenulate. Near margin a ring of about thirty-seven pairs of processes, about 0·04 mm. in length, distally slightly bifurcated, and extending some distance beyond margin. At bases of processes a crenulate line around case. Tracheal pore opens at margin and fold moderately distinct. Transverse, mid-thoracic, abdominal and thoracic sutures distinct. Sutures on abdomen slightly chitinised in mid-dorsal line. On each abdominal segment two pairs of regularly arranged very small spines; similar spines present on cephalo-thorax. A pair of long spines anteriorly on cephalo-thorax, on first abdominal segment and near caudal pore.

Vasiform orifice subcircular to subcordate, in some specimens, operculum fills orifice but in others lingula slightly exposed. Caudal fold distinct, first expanding and then narrowing posteriorly to caudal pore.

Collected on *Baccaurea motleyana*, Johol, Negri Sembilan, 29 March, 1927, Kampong Bahru, Kuala Lumpur, 6 May, and Kuala Pilah, February, 1929, on *Phyllanthus frondosus*, 26 September, 1928, Kuala Lumpur, and on *Morinda* sp., 13 October, 1928, Kuala Lumpur.

Dialeurodes bifurcata, sp. n.

Pupa case on leaf, whitish in colour, no secretion evident, convex, length 0·66 mm., breadth 0·47 mm., elliptical, broadest across first abdominal segment. Margin finely

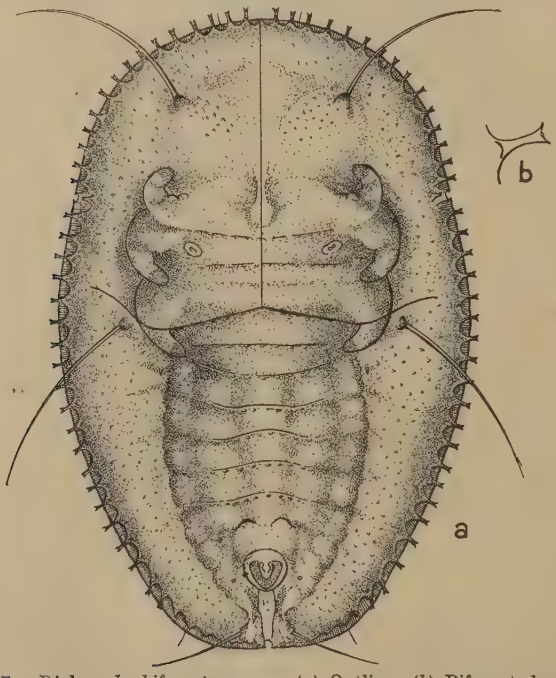


Fig. 7.—*Dialeurodes bifurcata*, sp. n. (*a*) Outline; (*b*) Bifurcated spine.

crenulate. Submarginal area with about 40 pairs of short bifurcated processes, two or three pairs posteriorly shortened and undivided. Tracheal pore situated between fifteenth

and sixteenth pairs and is slightly depressed; tracheal fold not discernible. A smaller bifurcate process arises internally to pore. Transverse and thoracic sutures distinct. Derm with exception of dorsal disc sparsely covered with small papillae. A pair of long spines is situated anteriorly in cephalo-thorax, near third pair rudimentary legs, and posteriorly near caudal fold.

Vasiform orifice subcircular without teeth: operculum almost fills orifice obscuring lingula. Caudal fold distinct broadest at middle, narrowing anteriorly and posteriorly.

Collected on Rambutan (*Nephelium lappaceum*), on various dates, Kuala Lumpur, and 6 May, 1927, Kepong, and on *Nephelium mutabile*, on 4 July, 1928, Pudu.

Dialeurodes distincta, sp. n.

Pupa case yellowish, flat, no secretion, subcircular to ovate, length varies, average length 1·09 mm., breadth 1·22 mm. Margin entire and armed with fourteen pairs of long fine spines arising from distinct tubercles. Tracheal pore opens at margin and fold is outlined by two lines running into submarginal area. Caudal pore prominent with caudal

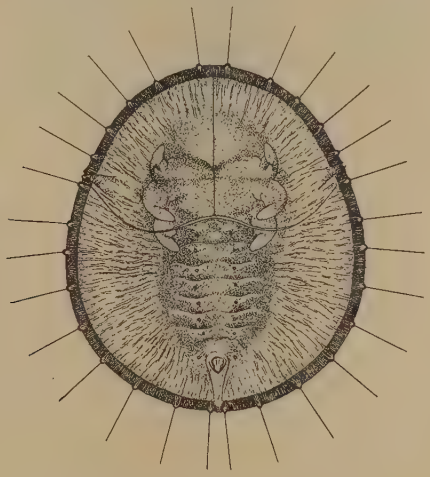


Fig. 8.—*Dialeurodes distincta*, sp. n.

fold conspicuously dotted near vasiform orifice. Distinct marginal rim around case. Thoracic and transverse sutures marked: the latter seems to follow the marginal rim meeting anteriorly in mid-dorsal line. Submarginal area prominently striated and with regularly distributed minute spines. Abdominal segments distinct, each with similar small spines as submarginal area, and anteriorly placed a pair of subcircular porous areas.

Vasiform orifice subcordate, no teeth on lateral or posterior inner margin. Operculum similar in shape, obscuring lingula.

Collected on an unidentified plant, April, 1929, Kuala Lumpur.

Dialeurodes spiniferosa, sp. n.

Pupa case on undersurface of leaf, singly, yellowish-brown without lateral or dorsal secretion. Length about 1·0 mm., breadth 0·72 mm. Margin entire and marginal sutures distinct in marginal area. Thoracic pore opening just within margin and surrounded internally with a large porous area. Thoracic fold indiscernible. Caudal fold very narrow, terminating in a conspicuous pore and surrounded by a demarked area. In mid-dorsal

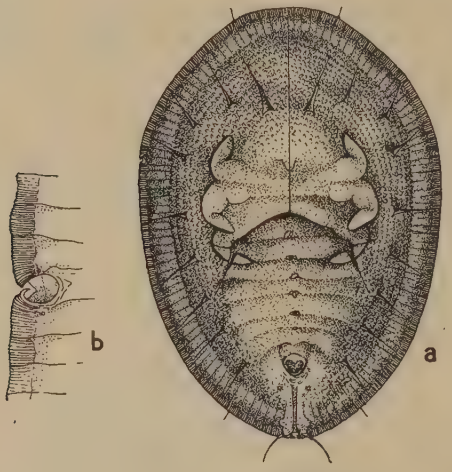


Fig. 9.—*Dialeurodes spiniferosa,* sp. n. (*a*) Outline; (*b*) Thoracic pore.

line of abdomen chitinised porous looking areas present. Abdominal sutures fairly evident. Case characterised by a submarginal ring of eight pairs of jointed spines, and a pair anteriorly near mid-thoracic suture and near third pair of rudimentary legs.

Vasiform orifice cordate with inner margin finely toothed and an inconspicuous projection on inner posterior margin, operculum sometimes truncated filling about two-thirds of orifice, leaving tip of lingula generally exposed.

Collected on *Diospyros* sp., 15 February, 1928, Kuala Lumpur.

Dialeurodes bipunctata, sp. n.

The appearance of the pupa case on leaf is not known. This species is described from one specimen found amongst other Aleyrodid material collected from *Gluta* sp. The specimen is broadly elliptical, length 1·09 mm., breadth 0·82 mm. Margin crenulate, marginal area differentiated. In submarginal area a ring of minute spines; and anteriorly in cephalo-thorax a pair of small spines.

Tracheal and caudal pores open just within margin and appear as chitinised thickenings of margin. Tracheal folds not visible, caudal fold indicated. Whole derm with exception of dorsal disc with crescentic markings. The distinguishing character of this species is the pair of large circular simple pores situated near the thoracic pores in cephalo-thorax. In subdorsal area of cephalo-thorax and in same line as thoracic pores and large simple pores a pair of smaller pores is evident. Abdominal sutures distinct, not chitinised: each abdominal segment with two pairs of minute spines.

Vasiform orifice small, subcordate, about as broad as long, without teeth or projections on inner posterior margin, operculum similar in shape almost filling orifice. Lingula obscured.

Collected on 12 July, 1927, on " Rengas," *Gluta* sp. Puchong.

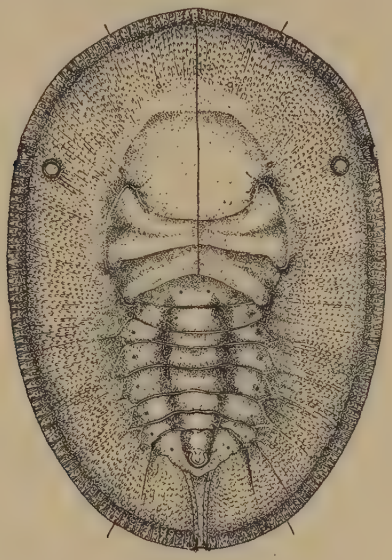


Fig. 10.—*Dialeurodes bipunctata*, sp. n.

UN NOUVEAU MELASIDE (COL.) DES ÎLES SALOMON

Par E. Fleutiaux.

Fryanus insularis, sp. n.

7½ mm.—Allongé, parratile, mat; pubescence légère, de la couleur du fond. Tête jaune, avec une petite tache noirâtre à la base des antennes; convexe, finement et densément ponctuée; épistome peu retréci à la base, où il est environ aussi large que l'espace sur antennaire; yeux petits, globuleux. Antennes distantes des yeux, longue, dépassant un peu la moitié du corps, robustes, noires, avec le 2e article ferrugineux; 1er courbé, épaissé au sommet; 2e très petit; suivants serriformes; dernier allongé, pronotum court, semi-circulaire en avant, sinné à la base, convexe, brusquement déclive en arrière; jaune, finement et densément ponctué. Elytres longs, cylindriques, conjointement arrondis au sommet; noirs, avec une tache jaune humérale assez grande prolongée en arrière sur le 6e interstice; stries profondes; interstices finement rugueux. Dessous entièrement jaune, dernier arceau ventral légèrement enfumé sur le bord. Pattes jaunes; tarses en partie obscurs.

Îles Salomon (*R. A. Lever*). Un exemplaire *Imp. Inst. Ent.*

Voisin le *F. gracilicornis*, Fleutiaux; en diffère surtout par les antennes robustes et serriformes; et aussi par la tête presque entièrement jaune, le pronotum immaculé, les élytres marqués d'une tache humérale grande, effilée en arrière, les tibias de la même couleur que les fémurs, les tarses partiellement obscurs.

THE FORMS OF *ELYMNIAS KUNSTLERI*, HONR. (LEP. SATYRIDAE)

By A. Steven Corbet, F.R.E.S.

The species was first described from a Perak female nearly fifty years ago; in 1891 a second female was taken in Java by H. Fruhstorfer, and in 1918 an example of the same sex was captured in British North Borneo by G. F. C. Woollett. There are no records of the capture of males, and the writer is convinced that the male *kunstleri* was described as *dohrni*, from North Sumatra, by De Nicéville. The reasons for this belief are: (1) the male holotype only of *dohrni* was known and no males of *kunstleri* have been reported; (2) in Sumatra, in 1923, Mr. C. J. Brooks captured a male corresponding to *dohrni* and a female *kunstleri* in the same area of jungle within a period of 7 months; (3) in 1931, the writer captured what is evidently the Malayan race of *dohrni* and a *kunstleri* female at the same spot in Selangor within a week; (4) recently a Javanese specimen of *dohrni* was found in the Oberthür collection at the British Museum, so that males of *dohrni* and females of *kunstleri* are now known from the Malay Peninsula, Sumatra and Java.

De Nicéville's description of *dohrni* is supplemented by an excellent figure. It may be stated that the male *kunstleri* is rather like *pellucida*, Fruhst., from North Borneo, but the most characteristic feature, and one which separates it immediately from all the *Elymnias* species figured in Seitz, *Macrolepidoptera of the World*, **9**, is the arrangement of the four white, submarginal spots on the fore-wing. Of these spots the three uppermost are in line and directed to the middle of the basal margin; the fourth spot in space 1 is out of line with the others and placed nearer to the distal margin. On the hind-wing the vein endings are not produced as in *pellucida*.

Of the five males mentioned in this paper, the holotype of *dohrni* (in the Tring Museum and kindly examined by Dr. K. Jordan, F.R.S.), the male from the Malay Peninsula and a male in the British Museum (*ex* coll. Joicey) have one dark hair tuft situated in the area of modified scales in the costal region of the upperside of the hind-wing; the Sumatran male in coll. Brooks and the Javanese male have two such hair tufts. It seems improbable that this difference in the number of hair pencils has any significance for such a character is often variable, as for instance in the genus *Amathusia*.

If *Elymnias kunstleri* is examined in the light of the views recently advanced by the writer (1933, *Nature*, **131**: 61) on the relation between the age of a species and its degree of variability, it is found to possess all the characters of an old species. It is very rare, without close allies and exhibits quite striking subspecific differences, all of which suggest that the species is well on the road towards extinction. Breeding experiments would yield results of very considerable interest, for there is still the possibility that there may be a female form like the male; it is almost certain that the food-plant is a species of rattan or bamboo.

Elymnias kunstleri kunstleri, Honr.

(1885, Berlin. Ent. Z., **29**: 276.)

♂. The wings are shaped as in the type *dohrni* figured by De Nicéville (*loc. cit.*, pl. S, fig. 12).

Upperside: Both wings velvet black but the hind-wing is paler than the fore-wing: in reflected light the apical area of the fore-wing is a deep blue. On the fore-wing a white,

submarginal spot is placed in each of the spaces 1 to 4 and these spots decrease in size from the tornus to the apex; the uppermost spot is tinged violaceous and the spot in space 1 is out of line with the other spots, being placed nearer to the distal margin. As in the case of the fore-wing, the hind-wing is marked as in the type *dohrni*; that is, there are two white submarginal spots in space 1 and single white spots in each of the spaces 2 to 6. The spot in space 6 is the largest but the others decrease in size from the tornus to the apex. The distal margin of the hind-wing is more broadly irrorated with white than is the case with the type *dohrni*. The hind-wing bears one black hair pencil in the costal area.

Underside: Both wings greyish-brown and marked with white, submarginal spots as above. The wing-bases are ornamented with a few minute white dots and the distal margin of the hind-wing is broadly marked with fine, white strigae. Along the basal margin of the fore-wing is an area of modified scales corresponding to the similar area on the upperside of the hind-wing.

The length of the fore-wing is 46 mm. (as in the type *dohrni*).

The unique neoallotype was taken at Bukit Kutu (3400 feet), Malay Peninsula: Selangor, 18.iii.1931 (*A. S. Corbet*), in whose collection it is contained.

♀. Apparently only three further specimens have been taken since the capture of Kunstler's classic insect. One was taken at Gunong Angsi, Negri Sembilan (vii.1919, *A. R. Sanderson*), and is now in the Hope Museum at Oxford, another was captured at Bukit Kutu, Selangor, 13.iii.1931 (*A. S. Corbet*), and is in the writer's collection, and the third specimen, also from Bukit Kutu, 20.iii.1931 (*H. M. Pendlebury*), is in the Selangor Museum.

Elymnias kunstleri dohrni, De Nic.

(1895, J. Bombay Nat. Hist. Soc., **10** : 21.)

♂. The holotype of *dohrni* came from Bohorok in North Sumatra. For a long time no other examples were known but, recently, two further specimens have come to light. The Joicey collection has a male (*ex* coll. Grose-Smith) without a locality label but presumably from Sumatra. A male (wing expanse 78 mm.) was taken at Mt. Lalangae (2500 feet), Lebong Tandai, West Sumatra, in July 1923 by Mr. C. J. Brooks and is now in his collection; it differs from De Nicéville's figure in having two, instead of four, blue streaks in the apical area of the upperside of the fore-wing and in the absence of the fine, white strigae along the distal margin on the hind-wing above. It is possible that the West Sumatran specimen represents a distinct race, but further material is required to settle this point.

♀. *Upperside*: Both wings with the ground-colour pale greyish-white as in typical *kunstleri*, but the dark brown dusting gives it a darker and more ferruginous appearance. The markings are as in typical *kunstleri* but the veins are more broadly dusted with dark brown and a series of transverse discal bands, composed of large, diffuse, conjoined spots, can be recognised. On both wings the vein endings are indicated by brown diffuse spots as in the Bornean race and not in typical *kunstleri*.

Underside: The markings resemble those in the Bornean subspecies in that the diffuse spots are conjoined to form transverse bands, but the spots in the discal area of the hind-wing are larger and more prominent: in *kunstleri* from the Malay Peninsula the spots are not conjoined.

Wing expanse 100 mm.

The unique neoallotype was taken at Lebong Tandai, West Sumatra, on 8th January, 1923, by Mr. C. J. Brooks, in whose collection it is contained.

Elymnias kunstleri rileyi, nom. n.

(*E. kunstleri borneensis*, Riley (*praeocc.*), 1923, Entomologist, **56** : 36.)

♂. The male is unknown.

♀. The only known specimen of the female was taken at Mt. Lupasan (4000 feet), Province Clarke, British North Borneo, during September 1918. It is heavily dusted with brownish-black and is much blacker in appearance than specimens from the Malay Peninsula, Sumatra or Java. It is contained in the collection of the British Museum (Natural History).

Elymnias kunstleri gauroides, Fruhst.

(1894, Ent. Nachr., **20** : 43, and * 1894, Berlin. Ent. Z., **39** : 243.)

♂. *Upperside* : Both wings lighter brown than in the other subspecies and, as usual, the hind-wing is paler than the fore-wing. The obscure blue streaks found in the apical area of the fore-wing in *dohrni* are replaced by three prominent, elongated, violaceous spots and some obscure spots are placed along the distal margin near the tornus. A small but conspicuous violaceous spot is placed in space 1 near the basal margin and a similar spot in space 4, each being situated about 1 cm. from the wing-margin (the spots in spaces 2 and 3 in the males from the Malay Peninsula and Sumatra are present only on the underside of the fore-wing in *gauroides*). The hind-wing has a series of submarginal white spots as in *dohrni* and the distal margin is narrowly chequered brown and white. Two dark hair pencils are placed in the costal area of modified scales on the hind-wing.

Underside : Both wings paler and more ochreous brown than above. The white submarginal spots are arranged as in *dohrni* and the hind-wing is narrowly irrorated with white at the tornus. At the extreme base of each wing are a few minute white dots.

The length of the fore-wing is 43 mm. (wing expanse 81·5 mm.).

The unique neoallotype from the Oberthür collection in the British Museum is labelled " ex Musaeo Ach. Guénée " and " Java, coll. Daube."

♀. The only known female was taken at Tjisewu, Tjidamar district, West Java, at an elevation of 2000 feet. It has a wing-expanse of only 80 mm. and is much paler and less heavily marked than the females of the other subspecies. Presumably it is still contained in the coll. Fruhstorfer.

Elymnias kunstleri and its Mimetic Associations.

As Mr. H. M. Pendlebury has pointed out, in most cases of mimetic association in the Malaysian subregion the mimetic species do not fly in precisely the same localities as their models, so that only on rare occasions do insectivorous animals see both model and mimic together. Where model and mimic do fly together (e.g. *Danaida melaneus* and *Hestina nama*, and *Euploea diocletianus* and *Papilio paradoxa*, f. *aegialus*), the latter is such a faithful copy of the former, in flight, that experienced collectors are deceived. Such is the case with both sexes of *Elymnias kunstleri* ; at all events in the Malay Peninsula, the male is a mimic of *Euploea deione*, *E. alcathoë* or possibly *E. midamus*, depending upon whether the butterfly is seen from above or below, whilst the female bears a striking resemblance to *Hestia lynceus* and *H. logani*. I was completely deceived by both sexes at Bukit Kutu and only discovered that the butterflies were not Danaids on removing them from the net. *Euploea deione*, *E. alcathoë*, *Hestia lynceus* and *H. logani* are not uncommon at this particular spot at Bukit Kutu, and it is worthy of remark that the male

* This reference is given incorrectly in Seitz, *Macrolepidoptera of the World*, **9** : 397.

kunstleri was taken in flight some 10 feet above the ground, which is precisely the level at which the *Euploea* models are usually in flight. The case of the female *kunstleri* shows that quite appreciable differences in size between model and mimic are of no importance ; actually the female *kunstleri* is only slightly larger than *Ideopsis daos*, but bears little resemblance to this species when on the wing.

Of the males of the four subspecies of *E. kunstleri*, that from the Malay Peninsula has the most intense blue reflection on the upperside of the fore-wing, whilst in that from Java both blue markings and white spotting are most restricted ; in *Euploea deione* the male of the Malayan race exhibits the greatest amount of blue colouring, but in the Javanese form the blue colouring is almost obsolete and the white spotting on the fore-wing is reduced almost to vanishing point. It is interesting to note that *Hestia lynceus stolli*, Mre., from Java is paler in colour than the Malayan, Sumatran and Bornean subspecies corresponding to the state of affairs obtaining with the females of *E. kunstleri*. Nevertheless, Mr. Woollett stated that he captured the Bornean female *kunstleri* in a neighbourhood where *Hestia* is not known to occur, and I think that the explanation of this may be that the *Elymnias* species may be wanderers to a certain extent; it is unusual to take more than a single specimen at a time (except *E. hypermnestra*), and on one or two occasions I captured specimens in my garden in Malaya which had almost certainly come from a forest reserve some two miles distant.

It is a pleasure to acknowledge my indebtedness to Mr. N. D. Riley for according the facilities at the British Museum (Natural History) which made possible this investigation.

AFRICAN BEES OF THE GENUS *ANTHOPHORA*

By T. D. A. Cockerell, F.R.E.S.

The bees recorded here were received from the Imperial Institute of Entomology, and all the types will be placed in the British Museum.

Anthophora leonis, sp. n.

♀. Length about 18 mm., anterior wing nearly 13; black, very robust, no light colour on face or mandibles; eyes brown; antennae black, third joint very long, about as long as next four together; hair of face very pale fulvous, of labrum and cheeks yellowish-white, more strongly fulvous in region of ocelli, but a band of long black hair behind ocelli, the occipital fringe pale fulvous; malar space linear; clypeus rugosopunctate; thorax with bright fox-red hair, but posterior disc of mesothorax paler and mixed with dark brown, giving a sooty appearance; disc of scutellum with black hair; tegulae black; wings dilute fuliginous; femora fringed with yellowish-white hair; anterior tibiae and tarsi with a long fringe of the same behind, but with short dark brown hair on outer face; middle tibiae and tarsi with very dark brown hair, some red on tarsi near base; hind tibiae and tarsi with light red hair on outer side, black on inner side of tibiae, dark reddish on inner side of basitarsi, the brush at end of basitarsus black; abdomen with long light fulvous hair covering first tergite; second to fourth with thin greyish-white hair, thickest on fourth, but no bands; fifth covered with black hair except at sides, where it is yellowish-white, and there is a reddish patch in the middle of the black; venter with fringes of long pale hair, and the sternites suffusedly reddened apically.

Cape Town : Lion Head, 12 Dec., 1931 (*L. Ogilvie, J. Ogilvie*). A very fine species, related to *A. gigantea*, Friese, but not so large, and the abdomen not banded.

Anthophora andersoni, sp. n.

♂. Length about 13·5 mm., black, robust, with the labrum (except narrow margin and basal spots), base of mandibles, clypeus (except two very large boot-shaped black marks), low and broad supraclypeal mark, triangular lateral marks (filling space between clypeus and eye, not quite up to level of top of clypeus), and stripes on scape, all white; antennae otherwise black, the flagellum thick; third antennal joint short, about equal to next two together; cheeks with long white hair; face with thin long outstanding black hair; front with two transverse bands of black hair, but some white hair above antennae; occipital region with hair mixed black and white; malar space linear; thorax above with mixed yellowish-grey and black hair, giving a dark sooty effect; sides of thorax with grey hair, but beneath with white; tegulae black; wings dilute fuliginous; basal nervure falling short of nervulus; legs ordinary, very dark reddish, with black hair, but anterior legs with black hair, red on inner side of tarsi; first three tergites black without bands or evident hair; fourth and fifth with greyish-white hair bands; sixth and apex with black, but some long white hairs at sides of sixth; venter black, with a tuft of white hair at each side of fifth sternite.

British East Africa: Kabete, at roses, 30 Oct., 1918 (*T. J. Anderson*). Very close to *A. mimadvena*, Cockerell, but easily separated by the very dark hair of thorax, dark hair on sixth tergite, black tegulae and clear white face-marks. A male *A. mimadvena* was taken by C. C. Gowdey at 10,000 ft. on Mt. Ruwenzori, May 16, 1911. It differs from the type in the abundant white hair on outer side of middle tibiae, but I have another specimen from Mt. Ruwenzori which is like the type.

Anthophora atribasis, sp. n.

♂. Length about 12 mm., anterior wing about 9; black, robust, with the labrum (except narrow margin and basal brown spots), clypeus (except two large boot-shaped black marks), lateral marks (filling space between clypeus and eye, the upper margin concave), narrow supraclypeal band with a median projection, greater part of mandibles, and scape in front, all dull pale yellow; malar space very short, reddish; flagellum ferruginous, dusky above; third antennal joint about or nearly twice as long as fourth, fifth much longer than fourth; hair of cheeks snow white, of face thin and dull white, of vertex light orange-fulvous; thorax above with dense very bright orange fulvous hair, with no dark hair intermixed, this extends part way down the sides, but beneath the hair is dull white; tegulae pale fulvous; wings hyaline, a little brownish; basal nervure falling short of nervulus; anterior femora behind, front and middle tibiae on outer side, and front tarsi on outer side, all densely clothed with white hair; middle tarsi, and hind legs (except a pale spot below knees) with black hair; tegument of coxae, trochanters and femora reddish; middle tarsi ordinary, hind tarsi with joints 2 to 4 swollen, globular; abdomen appearing pure black, except for broad dense entire pure white bands on margins of tergites 2 to 5, and a little white at extreme sides of sternites 3 to 5; apical tuft black.

N. Nigeria: Azare, 1926 (*Dr. Ll. Lloyd*). A striking and beautiful species, known by the four white bands on abdomen, and the first tergite wholly black. There is a strong general resemblance to *A. advena*, Smith, but that has no bands on second and third tergites, and reduced lateral face-marks.

Anthophora aethiopica, Cameron.

Males. Transvaal; Louis Trichardt, April 4–10 (*A. Mackie, J. Ogilvie*). S. Rhodesia; Shangani, De Beers Ranch, May 8–12 (*L. Ogilvie*). Tanganyika Territory, Tanga, June 10 (*J. Ogilvie*). These have the face-marks white,

but I have one from Durban (determined by me as *A. acraënsis*, Fab., var.) in which they are pale yellow, as described by Cameron. The wings are dilute brown, darker and not so red in the Tanga specimen; Cameron says clear hyaline. I should hesitate about the determination, but for the fact that Brauns saw *A. aethiopica*, and reported that it was *A. acraënsis*, with white-haired last tergite. My present opinion is that this southern and eastern species should be separated from *A. acraënsis*, and probably it will be found to present two or three recognisable races, when sufficient material is available.

Anthophora cingulicauda, sp. n.

♀. Length about or nearly 15 mm., anterior wing slightly over 11; black, robust, with white hair on sides of face, cheeks, lower part of sides of thorax, and base of abdomen; occipital fringe white, but top of head with many long black hairs; thorax above, and on upper part of sides, light fulvous, and large tufts of rich fulvous hair at sides of metathorax; broadly triangular supraclypeal mark, reversed **T** on clypeus (the apical band slender), labrum (except the basal spots and a suffused apical spot) and base of mandibles all creamy white; sides of face and the scape all black; a highly polished band, interrupted in middle between hind ocelli; tegulae light rufo-fulvous; wings strongly brown; legs black, with black hair, but pure white on anterior femora and tibiae behind; first tergite with white hair on anterior face, but black dorsally; fourth and fifth with white hair, the fifth with a narrow black apical band; sides of sixth with hair shining light red in some lights.

S. Rhodesia: Matopo Hills, April 17–30 (*J. Ogilvie*). Allied to *A. advenula*, Ckll., but easily separated by the much broader apical plate of abdomen, the narrow black band above it, the shorter labrum, and the much less brilliant hair of thorax. The antennae are nearly as in *A. advenula*, the flagellum beyond the base red beneath, though only for a short distance.

Anthophora nativitatis, sp. n.

♂. Length about 14 mm., anterior wing 11·5; black, robust, the thorax above and on upper part of sides densely clothed with very bright orange-fulvous hair, not mixed with black; cheeks and greater part of sides of thorax with pure white hair; face with mixed white and black hair, top of head with black and pale grey mixed; eyes red; labrum (except narrow lower margin and small basal spots), base of mandibles, hook-like lateral face-marks, broad and low supraclypeal mark, and clypeus except very broad boot-like marks, all white; the clypeal marks are so broad above that they just meet on the upper margin, leaving the white band between them to narrow to a point; below they are not notched, and the white apical band of clypeus is very broad; antennae entirely black, the flagellum stout; tegulae light rufo-fulvous; wings brown; basal nervure falling short of nervulus; legs black, with black hair, pure white on anterior femora behind, and on outer side of their tibiae and tarsi; red hair on inner side of front tarsi; abdomen finely and closely punctured, the first three tergites appearing pure black, fourth to sixth entirely covered with long pure white hair; apex with two sharp widely separated teeth; apical part of venter with white hair.

S. Rhodesia: Christmas Pass, Umtali, May 20–21 (*Alice Mackie*). Resembles *A. cuneata*, Ckll., but easily separated by the broad boot-like clypeal marks (these being cuneiform and sharp-pointed in *A. cuneata*). The form of the clypeal marks also separates it from *A. advena*, Sm., and *A. aethiopica*, Cam. The labrum is quadrate, much longer than in *A. cingulicauda*.

Anthophora cuneata, sp. n.

♂. Length about 14 mm., anterior wing about 10; black, robust, thorax above clothed with bright rufo-fulvous hair, with some black intermixed; cheeks and sides of thorax (except upper part, which is dull fulvescent) with pure white hair; face with mixed black and white, vertex with black and pale fulvous; scape with a white stripe in front (none in *A. nativitatis*); flagellum black; labrum (except narrow brown apical margin, and basal spots), base of mandibles, clypeus (except lateral subcuneiform black marks), supraclypeal mark and lateral marks (filling space between clypeus and eye), all white; tegulae light rufo-fulvous; wings rather dilute brown; anterior legs with pure white hair, the others with black; abdomen with first three tergites dullish, appearing black, but first with long pale hairs on anterior face, and third with a little white hair subdorsally just above margin; fourth with black hair basally, but a broad pure white apical band; fifth similar, but the black reduced to some long hairs on the basal part; sixth with white hair; apex with a broad brush-like truncate black fringe, concealing the teeth; venter all black.

Uganda: Jinja, Aug. 1928 (*Dr. van Someren*). Very similar to *A. nativitatis*, but easily distinguished by the facial marks, which if considered foot-like, would show the foot, with pointed end, in the position of standing on the toes; it is also known by the broadly black-haired base of fourth tergite, and other characters. The labrum is broader than long.

Anthophora bipartita, Smith.

Kenya: Nairobi, July 1930 (*van Someren*).

Anthophora caelestina, Cockerell.

Natal: Weenen, 1926 (*H. P. Thomasset*).

Anthophora caerulea, Friese.

Sierra Leone: Njala, 1931 (*E. Hargreaves*).

Anthophora cincta, Fabricius.

S. Nigeria: Ibadan (No. 492).

Anthophora terminate, Smith.

S. Rhodesia: Matopo Hills, April (*J. Ogilvie*).

Anthophora capensis, Friese.

Kenya: Nairobi, July 1930, both sexes (*van Someren*).
S. Rhodesia: Vumba, Umtali, May (*L. Ogilvie*).
Natal: National Park, March (*A. Mackie*). Transvaal; Louis Trichardt, April (*A. Mackie*).
Orange Free State: Ficksburg, both sexes, Feb.–March (*J. Ogilvie, A. Mackie*); Gum Tree, Feb. 29 (*J. Ogilvie*).

Anthophora vestita, Smith.

Orange Free State: Ficksburg (*J. Ogilvie, L. Ogilvie, A. Mackie*).
Natal: National Park, March (*J. Ogilvie*).
Transvaal: Louis Trichardt, April (*L. Ogilvie*).

Anthophora fulvodimidiata, Meade-Waldo.

Belgian Congo: Dilolo (*Ckll., W. P. Ckll.*).

Anthophora nigritarsis, Friese.

Belgian Congo : Elisabethville (*J. O.*, *W. P. C.*); Dilolo (*W. P. C.*, *J. O.*, *Ckll.*).

Anthophora odontura, Cockerell.

Natal : Ingogo, March 21–22 (*Alice Mackie*).

Anthophora pseudoconcinna, Meade-Waldo.

Uganda : Entebbe (*C. C. Gowdey*). Also occurs in the Belgian Congo, as at Kiama, Katanga (*Brédo*).

Anthophora oldi lusoria, Cockerell.

S. Rhodesia : Matopo Hills, April 17–30 (*A. Mackie*). The type locality is Gwelo.

Anthophora candida, Smith.

Sudan : Port Sudan, June 26, 2 ♀ (*J. Ogilvie*). This is an Asiatic species, which comes over to the Sudan.

Anthophora melanodonta, sp. n.

♂ (Type). Length about 11 mm., anterior wing 7; black, not very robust; hair on head and thorax above very pale fulvous, with some brown on scutellum and hind part of mesothorax; on face, cheeks and sides of thorax white, but very thin on face; eyes pale greenish-grey, slightly reddish; malar space obsolete; face below antennae entirely bright yellow, the surface dull, supraclypeal mark a transverse band, angular above, clypeus with only a very small black spot at each side; labrum (except two basal spots, isolated from margin), basal half of mandibles, and scape in front, yellow; flagellum, except at extreme base, bright ferruginous beneath; tegulae light fulvotestaceous; wings dilute greyish, nervures dark; legs entirely black, including spurs; anterior femora fringed behind with long white hair, their tibiae and tarsi densely clothed with white hair on outer side; middle tibiae short, densely clothed with creamy-white hair on outer side; middle tarsi simple, with no brush on apical segment, the basitarsi clothed with white hair on outer side; hind coxae and trochanters with white hair anteriorly; hind femora with thin black hair; hind tibiae densely clothed on outer side with white hair, slightly stained with yellow, on inner side with black; hind tarsi with hair all black; abdomen black, with five broad pure white bands, the black parts of tergites with long black hair; sixth tergite and apex black, the apex strongly bidentate; first sternite suffused with reddish, and with white hair at apex.

♀. Hair of head and thorax above variable, but may be strongly reddened; hair-bands of abdomen white or pale fulvous; face-marks pale yellow, the clypeus comparatively short, with two large quadrate basal black marks, which are sharply angular below, but leave a very broad apical yellow band, and a rather broad median one; supra-clypeal mark a narrow band, not angular above; scape all black; flagellum very obscurely reddish beneath; labrum rugose, broadly black apically; hind femora with long white hair above; hind tibiae and tarsi with entirely dark hair, reddish black on outer side. No lateral face-marks.

Belgian Congo : Dilolo, July 24–27, two of each sex (*Cockerell*). I place the female here with some misgiving, but it seems to belong.

Anthophora tetradonta, sp. n.

♂ (Type). At first sight appears exactly the same as the last species, with the same yellow face and other characters, but certainly distinct by the following characters: labrum very much smaller and shorter, broader than long; clypeus more convex, shining between the punctures; supraclypeal band not angular above; flagellum dark, obscurely reddish beneath toward end; hair of head and thorax above variable, often rich rufo-fulvous, a short band of dense black hair along anterior margin of scutellum; hind tibiae and basitarsi with silvery-white hair on outer side, greyish at base of tibiae; dense black hair on inner side of hind basitarsi, but not of tibiae; first three abdominal bands variably, often very conspicuously, fulvous; apex of abdomen bidentate, and with a sharp tooth at each side, the four teeth usually reddish.

♀. Similar to the female ascribed to *A. melanodonta*, but marks on clypeus not distinctly angular below, space between them broad and whitish; hair of thorax above with very little yellowish tint, the black band evident on scutellum; abdominal bands white; fifth tergite with white hair at sides; hind tibiae with a band of white hair posteriorly, and basitarsus with much silvery-white hair on basal half.

Belgian Congo: Dilolo, July 24–27, four males (*J. Ogilvie, W. P. Cockerell, T. D. A. Cockerell*). Biano, one female, Aug. 8–11 (*J. Ogilvie*). I had at first considered the females from Dilolo and Biano to be one species, but noticing the differences described, concluded that they must belong to the two very similar but certainly distinct species represented by males. It is possible, however, that the supposed female of *A. melanodonta* belongs with *A. tetradonta*, and that the Biano insect is a third species. Biano is more than 200 miles from Dilolo. These small bees look much like the N. African *A. albida*, Dours, but that has a white face in the male, and quite different face-marks in the female. The nearest relative to these species is *A. natensis*, Ckll., taken by G. van Son on the Nata River and at N'Kate, Makarikari, on the Vernay–Lang Kalahari Expedition.

The species may be separated by the following key:—

Males . . . . . 1.
Females . . . . . 3.
1. Flagellum bright red beneath; yellow of face dull . . . *melanodonta*, Ckll.
   Flagellum dark, face at least moderately shining . . . . . 2.
2. Lower margin of labrum straight, slightly crenulate, with dark grey hair below . . . . . *tetradonta*, Ckll.
   Middle lower margin of the very short labrum black and tridentate *natensis*, Ckll.
3. Hind basitarsi; without light hair; face-marks yellow . *melanodonta*, Ckll.
   Hind basitarsi; with much light hair . . . . . 4.
4. Face-marks strongly yellow; no light hair-band at base of second tergite *tetradonta*, Ckll.
   Face-marks paler yellow, varying to white; a light band at base of second tergite . . . . . *natensis*, Ckll.

TWO NEW SPECIES OF THE GENUS *UMMA* (ODONATA)

By Cynthia Longfield, F.R.E.S.

Umma electa, sp. n.

♂. Abdomen, 46 mm. Hind-wing, 34 mm.

Head: Underside metallic blue-green. Labium and underside of labrum shining black, tips of mandibles brown. Upperside of labrum, clypeus, frons and whole epicranium brilliant royal-blue. Two livid spots on either side of the labrum, and the enlarged pedicels of the antennae also of a livid colour, the other joints black. Eyes dark brown. *Prothorax*: Metallic emerald-green with some royal-blue. *Synthorax*: The whole dorsal surface brilliant royal-blue. The rest of the thorax metallic emerald-green, with the following pale yellow: the 2nd lateral suture for entire length; the outside edge of the metepimeron; some touches at the wing and leg-bases; the urosternite and margin of the poststernum. *Abdomen*: 1st segment metallic emerald-green. 2nd–5th segments brilliant royal-blue on dorsal surface, turning to metallic emerald-green laterally. 6th–9th segments less blue and more green. 10th segment and anal appendages metallic emerald-green. Underside of abdomen bronze-green. *Legs*: Metallic emerald-green and royal-blue, the blue accentuated at the joints. Tarsus black, claws dark brown. *Wings*: Hyaline, with a purple-blue sheen. A pale yellow tinge between costa and radius, also suffuses the median space in both fore- and hind-wings. Costa and subcosta in all wings metallic green to nodus; radius, cubitus and secondary analis royal-blue. All other veins dull lilac. *Pt.* a bright metallic lilac, nearly 2 mm. long in the fore-wings along the lower edge covering 3–4 cells, and 2½ mm. long in the hind-wings covering 4–4½ cells. *Genital appendages*: The superior anal appendages conform in shape to those of the other species of the genus, excepting *U. mesostigma*. The inferior anal appendages, on the other hand, resemble the square-ended shape of those of *U. mesostigma*. It is in the penis, figured on p. 144, figs. 7, 14, that the greatest distinction lies.

♀. Minus the 5th–10th segments of the abdomen, otherwise exactly identical with the male, except for the *Pt.* which is ½ mm. shorter in the fore-wing, and 1 mm. shorter in the hind-wing. First 4 segments of abdomen, 16 mm.

Type ♂ and allotype ♀ (British Museum), Belgian Congo: Katanga, Kambove, 4000–5000 ft., 11.iv.1907 (*Dr. S. A. Neave*).

Umma distincta, sp. n.

♂. Abdomen, 38 mm. Hind-wing, 29 mm.

Head: Underside metallic emerald-green. Labium and underside of labrum shining black, tips of mandibles brown. Upperside of labrum and clypeus brilliant royal-blue. Frons and epicranium metallic blue and green. Two livid spots on either side of the labrum, the enlarged pedicels of the antennae also livid in colour, the other joints black. Eyes dark brown. *Prothorax*: Metallic emerald-green. *Synthorax*: Metallic emerald-green, with some royal-blue on the dorsum, and the following pale yellow: the 2nd lateral suture to one-fourth of the distance from the wing-base; the outside edge of the metepimeron; some touches at the wing and leg-bases; the urosternite and margin of the poststernum. *Abdomen*: The whole, from and including the first segment to the anal appendages, brilliant metallic emerald-green. Underside bronze-black. *Legs*: Metallic emerald-green, with some royal-blue at the joints. Tarsus black, claws dark brown. *Wings*: Hyaline, but suffused with a golden-green sheen. All veins metallic green. *Pt.* metallic, of an aquamarine colour, 2–2½ mm. long in the fore-wing covering 4–5 cells, and 2¾ mm. long in the

hind-wing covering 4–4¼ cells. *Appendages*: The anal appendages seem almost identical with those figured for *U. puella* by Sjöstedt in "Odonaten aus Abessinien" (1917, *Ark. Zool.*, **2**).

♀. Abdomen, 36 mm. Hind-wing, 31 mm.

The colouring differs from the male only in the following: legs bluer; dorsum less blue, more emerald; 10th segment of abdomen golden-green; wing-veining metallic blue. *Pt.* 1½ mm. long in fore-wing covering 2¼ cells, and 2 mm. in the hind-wing covering 3–3½ cells.

Type ♂ and allotype ♀ (British Museum), Northern Rhodesia: Kambole, Lake Tanganyika, August 1895 (*W. H. Nutt*).

Umma distincta closely resembles *Umma electa*, forming a distinct group with the latter as instanced by the metallic legs, the metallic pterostigma and the shape of the penis. It differs from *U. electa* by the smaller dimensions; the much greener colouring of the whole insect; the blue pterostigma; the shape of the inferior anal appendages, and the shape of the penis (figs. 6, 13, p. 144).

THE FORM OF THE PENIS AS A GROUP-CHARACTER IN THE GENUS *UMMA*, KIRBY (ODONATA)

By D. E. Kimmins.

In this paper, an attempt has been made to group the species of the genus *Umma* according to the form of the penis. From general appearances, it was obvious that the two species described by Miss C. E. Longfield (*U. electa* and *U. distincta*), were very closely allied and formed a clearly defined group, separable from all other described members of the genus. The penes of these two species were therefore examined, and they confirmed the close relationship, and at the same time they differed appreciably in form from that of the genotype, *U. cincta*, Selys. Other species were then examined and revealed the presence of three distinct groups. The chief characters employed in defining the groups are the upper and lower lobes of the third segment of the penis. Other characters could possibly be found in the terminal and internal folds, but owing to their membranous nature, the writer does not think that their form can be relied upon as a specifically constant character. The form of the lobes of the penis, however, appears to remain constant whether the material be dried or has been softened by the application of warm water.

The writer is much indebted to the late Mr. E. B. Williamson, of Ann Arbor, Michigan, for his kindness in enabling him to examine a male of the type series of *Umma saphirina*, Forster. Of the remaining nine species, he has been unable to study the following three species only, *Umma puella* and *U. fuscimarginis*, Sjöstedt, and *U. splendens*, Navas.

The groups may be divided as follows:—

I. Group of *cincta*, Selys.
Upper lobes of penis very short, acute.
U. cincta, Selys, *U. longistigma*, Selys.

II. Group of *mesostigma*, Selys.
Upper lobes of the penis narrow, projecting laterally as far, or almost as far, as the lower lobes.
U. mesostigma, Selys, *U. declivium*, Förster, *U. saphirina*, Förster.

III. Group of *electa*, Longfield.
Upper lobes of the penis broad, dilated at the apices.
U. electa, Longfield, *U. distincta*, Longfield.

I. Group of *cincta*, Selys.

Umma cincta, Selys. (Figs. 1, 8.)

Third segment of penis quadrangular, basal margin nearly straight, apical margin slightly produced in centre. Upper penis lobes small, acute, directed laterally. Lower penis lobes directed downwards, and, in ventral view, each at its apex expanded to form

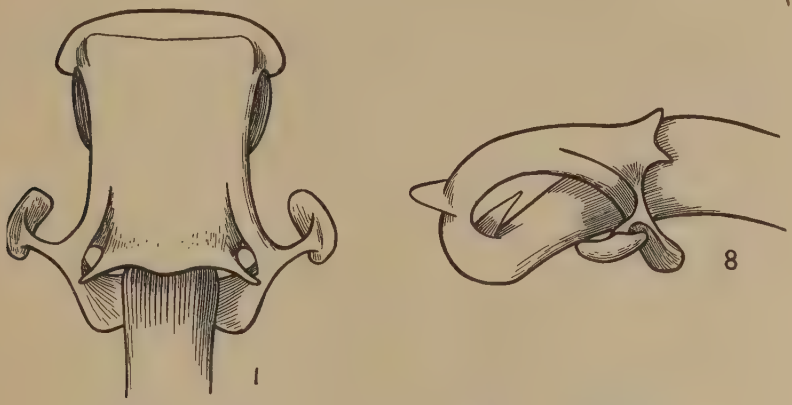


Fig. 1.—*Umma cincta*, Selys, penis ventral; fig. 8, penis lateral.

a T-shaped process with branches of about equal length. The inner branch is broad and dilated at its apex, whilst the other is slender and bears at its apex a thin, slightly convex, oval plate. In lateral view, the upper margin of this plate is somewhat sinuate.

Umma longistigma, Selys. (Figs. 2, 9.)

In general structure resembling that of *U. cincta* but differing as follows :—Basal margin of third segment concave, apical margin more produced. A distinct transverse furrow near the apical margin. Upper penis lobes shorter, less acute, and directed more towards

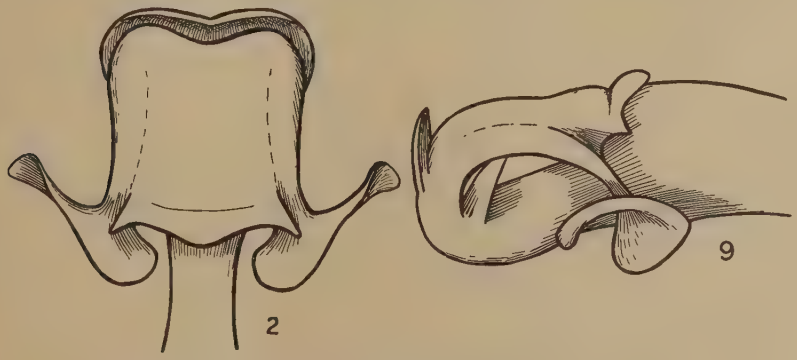


Fig. 2.—*Umma longistigma*, Selys, penis ventral; fig. 9, penis lateral.

the base of the penis. Lower lobes, in ventral view, each with the T-shaped process shorter and broader; outer branch without the oval plate at its apex, slender, slightly twisted and dilated. In lateral view the outer branch appears as a narrow curved process arising from, and crossing over, the broad inner branch.

II. Group of *mesostigma*, Selys.

Umma mesostigma, Selys. (Figs. 3, 10.)

Third segment quadrangular, towards its distal end with a slight constriction, apical margin flatly rounded. Upper lobes, in ventral aspect, each produced laterally in the form of a narrow plate set on edge, directed slightly downwards, the apex spatulate. Lower lobes, in ventral aspect, each in four sections, the first directed downwards, the second

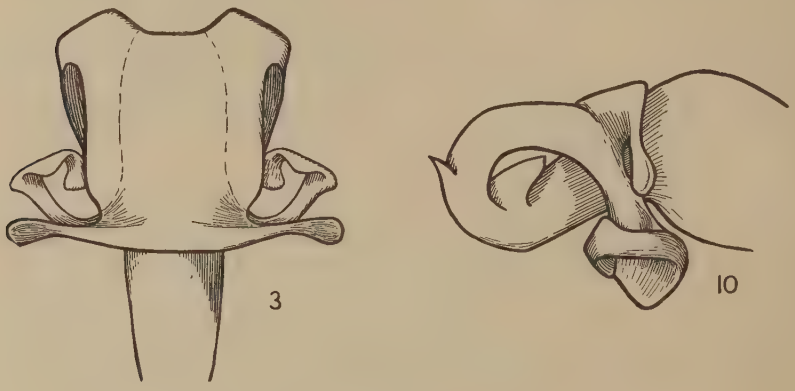


Fig. 3.—*Umma mesostigma*, Selys, penis ventral; fig. 10, penis lateral.

outwards and towards the base of the third segment, and finally two sections, each bent in an inward direction. The apex is rounded, and the penultimate section bears a rounded

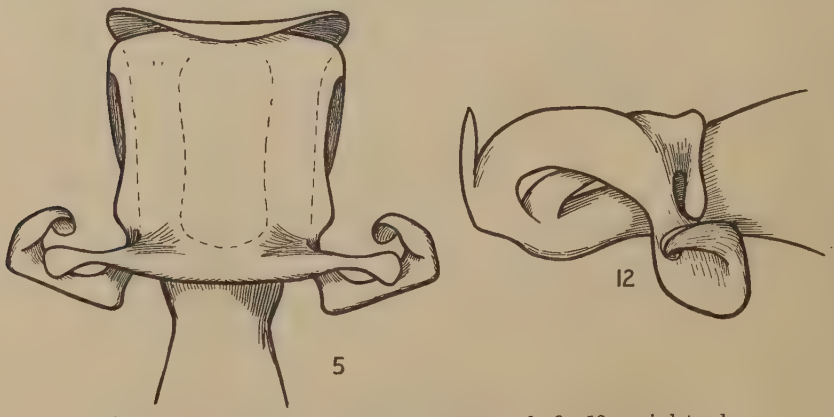


Fig. 5.—*Umma saphirina*, Förster, penis ventral; fig. 12, penis lateral.

membranous projection on its inner upperside. From the side, the basal portion of the lower lobe appears as a slightly curved plate, broadest beyond its middle, and with an acutely rounded apex. From the distal margin at the broadest part of the plate arises the basally directed portion of the lobe.

Umma saphirina, Förster. (Figs. 5, 12.)

Resembling *saphirina* but differing as follows:—Upper lobes proportionately a little shorter and stouter; lower lobes each directed more outwards, penultimate section in ventral view rather broader, final section shorter and less definitely angled with penultimate. From the side, the first section is somewhat broader.

Umma declivium, Förster. (Figs. 4, 11.)

Third segment a little more elongate than in *mesostigma* or *saphirina*; apical margin slightly concave. Upper lobes narrower and less dilated at their apices. Lower lobes

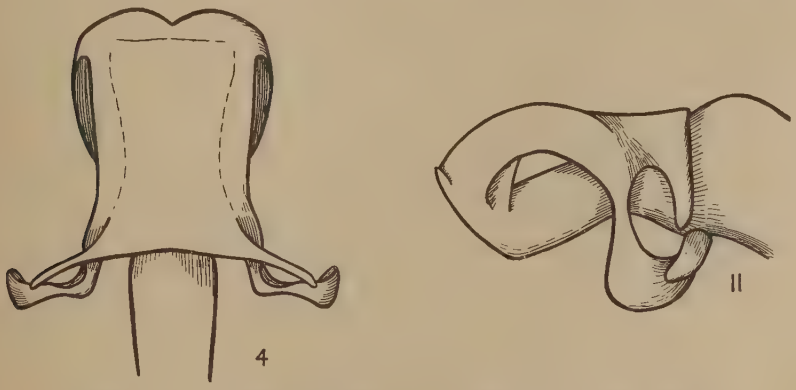


Fig. 4.—*Umma declivium*, Förster, penis ventral; fig. 11, penis lateral.

simpler and more slender, consisting each of only three sections, the first directed downwards, the second outwards and the third downwards and basally. In lateral view, the first section is narrow at the base, directed downwards and then distally, broadest at the bend.

III. Group of *electa*, Longfield.

Umma electa, Longfield. (Figs. 7, 14.)

Third segment quadrangular, somewhat dilated towards its apex, which is broadly excavate. Upper lobes produced laterally to about one-third of the width of the third segment at its apex, slightly convex, and dilating to obliquely truncated apices, apical angles rounded. Lower lobes, in ventral aspect, projecting a little beyond the upper lobes, both laterally and distally; distal margin sinuate. From the side, each lower lobe appears as a slender stalk, expanding towards its apex, which takes the form of a very convex plate, with its distal margin slightly excised.

Umma distincta, Longfield. (Figs. 6, 13.)

Third segment quadrangular, rather longer than broad, very slightly dilated distally, apex rather deeply excavate. Upper penis lobes produced laterally, broader at their bases than in *electa*, dilated towards their apices, which are obliquely truncate. From

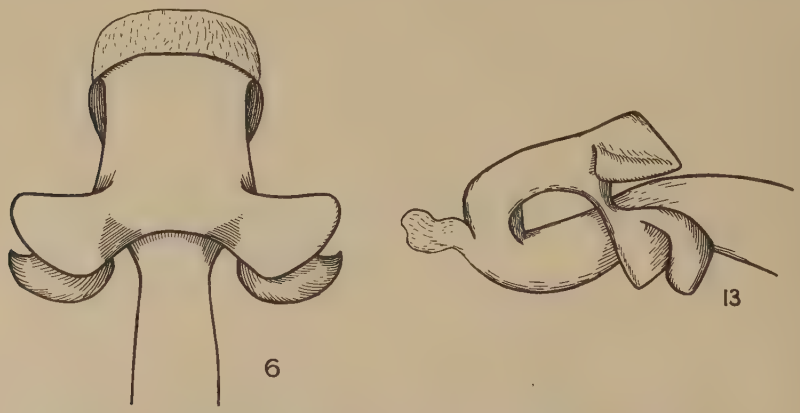


Fig. 6.—*Umma distincta*, Longfield, penis ventral; fig. 13, penis lateral.

the side, the upper lobes are seen to be less dilated than in *electa*. The lower lobes resemble those in *electa*. From below, the distal margin of each lobe is entire, not sinuate. From the side, the apical portion dilates more suddenly, and the overhanging outer margin is longer and somewhat narrower.

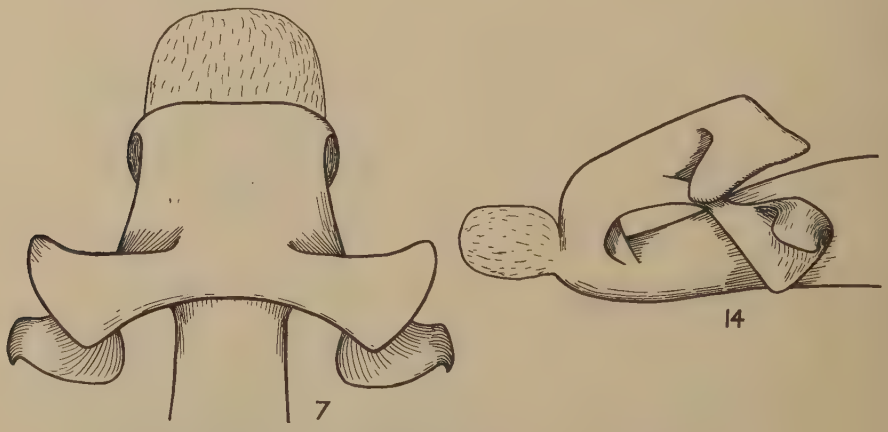


Fig. 7.—*Umma electa*, Longfield, penis ventral; fig. 14, penis lateral.

NEUE EXOTISCHE THYSANOPTEREN

Von Dr. H. Priesner.

(Mit 2 Abbildungen.)

Thripidae.

Frankliniella fallaciosa, sp. n.

♀: Der ganze Körper samt Schenkeln braunschwarz, die Borsten dunkel; Mittel-und Hintertibien braunschwarz, seltener die Basis der Hintertibien ringartig hellgelb, Mittel-und Hintertarsen gelbgrau oder dunkler; Vordertibien hellgelb, Aussen-und Innenrand mehr oder weniger stark graubraun getrübt, Vordertarsen gelblich. Fühler dunkel, nur das 3. Glied hellgelb oder auch dieses verwaschen, bisweilen die ganze Endhälfte getrübt oder fast einfarbig graugelb. Vorderflügel stark getrübt, das basale Viertel oder Fünftel vollkommen hyalin.

Kopf 120, samt IAF 130 μ lang, an den Augen 182 μ breit (bei grossen Stücken 138 : 200); Wangen parallelseitig oder, bei nicht gedrückten Stücken, deutlich geradlinig nach hinten verengt. Augenlänge (dorsal und lateral) 72 μ. Ocellen wie gewöhnlich, Interocellarborsten sehr lang, ihre Poren stehen in einer Linie, die die Zentren je eines hinteren mit dem vorderen Ocellus verbindet oder etwas innerhalb dieser Linie, ihre Länge ist 60–65 μ (bei grossen Stücken 85 μ); zwei Paar Anteocellarbörstchen vorhanden, klein, das hintere Paar am Innenrande der Augen. Das 4. Paar Postokularborsten (von innen gezählt) kräftig, 48–60 μ lang. Kopfseiten etwas gekerbt, eine Querwelle der Scheitelskulptur besonders deutlich, der Scheitelhinterrand dick und schwarz. Fühler etwa 328–355 μ lang, das 2. Glied ohne Höcker, aber mit zwei dorsalen, dunklen Borsten, *das 3. und 4. Glied am Ende deutlich geschnürt*, somit von anderer Gestalt als bei *cestri*, Mlt. und nicht so lang ausgezogen als bei *fortissima*, Pr. Borsten oben am 3. Glied 36–40 μ lang. Das Stielchen normal (*intonsa*-Gruppe). Fühlergliederlängen(-breiten): 28 (B. 34, Sp. 25), 46 (28), 72 (25), 58 (22), 44–45 (20), 56 (20), 12–14 (8), 16 (6) μ; grosse Stücke: 3. und folgende Glieder, 76, 64, 48, 60, 16, 20 μ. Prothorax 160 μ lang, 242 μ breit; die äusseren Vordereckenborsten 92–96 (bei grossen 120) μ, die inneren 80 μ lang, Hintereckenborsten 96–104 (b. grossen 112–120) μ lang, Hinterrand mit 5 Paar Börstchen innerhalb der Eckenborsten, von denen das zweite Paar von innen am längsten ist (50–52 μ); Pronotumfläche sehr spärlich beborstet. Mesothorax 407 μ breit. Flügel bei der Type 0·968 mm. lang. Costa mit 29–32, Hauptader mit 19–22, Nebenader mit 15–17 Borsten. Beine ohne Besonderheit, Hinterschienen innen mit langer und starker Dörnchenreihe. Abdominalsternite mit 6 am Hinterrande gelegenen Borsten, sonst unbeborstet. Das 8. Tergit mit sehr lockerem Kamm, der aus breit-dreieckigen Zähnchen besteht, die in der Mitte bisweilen kleiner und undeutlicher sind. Dorsalborsten am 9. Tergit klein, 36–40 μ, Hinterrandborsten lang, 150, 164–168 und 168–176 (bei grossen Stücken 160, 180 und 192) μ. Borsten 1 des 10. Segmentes 160–165 μ lang. Das 10. Segment auf 5/6 der Länge gespalten.— Körperlänge (gedehnt): 1·69–1·94 mm.

♂: In der Ausbildung der Borsten des Abdomenendes kaum variierend, während die Drüsenflächen der Sternite in der Grösse und Form sehr verschieden sein können.

Körperfärbung wie beim ♀. Wangen nach hinten verengt oder parallel (je nach Druck). Masse der Type in μ: Kopflänge 118–120, Kopfbreite an den Augen 173. Augenlänge lateral 66, dorsal 70. Interocellarborsten 54–56. Postokularborsten 46–48. Fühlergliederlängen(-breiten): 24 (31), 48–50 (27), 76 (20), 56 (21), 44 (20), 56 (21), 11 (8), 12–13 (6). Prothoraxlänge 144, Breite 216. Hintereckenborsten 88–92, innere Hinterrandborsten (2) 40. Mesothoraxbreite 303. Sternitdrüsen, Breite 72–76, letzte (7. Segment) 64.— Costa mit 24–26, Hauptader mit 19–21, Nebenader mit ca. 15 Borsten.

Am 9. Tergit sind die beiden mittleren Hinterrandborsten 40–44 μ lang, kräftig, dann folgen nach aussen ein borstenloser Porus und (dahinter) ein sehr kleines Börstchen, hierauf nach aussen B. 2, *die* 108–120 μ *lang ist*, dann folgt eine sehr kleine Borste (2a), hierauf die auf einem Höckerchen sitzende B. 3, die etwa so lang wie B. 2 und kaum stärker ist (Dicke 5 μ); eine etwas nach vorn gerückte Lateralborste misst 64 μ.

Hinsichtlich der Beborstung des 9. Abdominalsegmentes des ♂ ist zu bemerken, dass diese neue Art mit *fortissima* in der Anordnung der Borsten ziemlich übereinstimmt, nur sind bei dieser letzeren Art die Borsten 1, 3 und die Lateralborste dicker, dornartig (B. 3 : 6–7 μ dick, während dieselbe Borste eine Länge von nur etwa 84–88 μ hat). Die Fühler sind bei *fortissima* in beiden Geschlechtern lichter als bei *fallaciosa* und das 3. Glied deutlicher flaschenartig gebildet als bei dieser. Die Drüsenfelder der Sternite sind bei *fortissima* deutlich hantelförmig, am 3. Segment z.B. 105–120 μ breit. Bei der zwar viel kleineren und zarteren, aber schwachen Stücken der *fallaciosa* immerhin ähnlichen *Fr. simplex*, Pr., ist die Beborstung des 9. Tergites des ♂ eine ganz andere; bei *simplex* ist die B. 2 nicht viel grösser als 1a und 2a, daher viel kleiner als B. 1. Es wäre aber immerhin möglich, dass schwache ♂♂ der *fallaciosa* mit ♂♂ von *simplex* verwechselt würden, umsomehr, als es *fallaciosa*-Stücke gibt, bei denen die Drüsenfelder *klein und rundlich* sind.

parvifossis, f. n.

Bei dieser Form sind die ersten Drüsenfelder höchstens 36–44 μ breit (in einem Falle area 1 nur 28 μ), aber die Fühlerfärbung, Fühlerform, Färbung und Beborstung des Abdomens ist dieselbe wie bei der typischen Form, so dass auch die Varietät bei genauem Studium speziell der Chaetotaxie des 9. Tergites von *simplex* sicher unterschieden werden kann. Ich möchte nur noch hinzufügen, dass auch *simplex* in der Form der Drüsenfelder stark variiert (vergl. f. *celata*, Pr., 1932, Wien. Ent. Ztg., **49** : 185).

Berücksichtigt man das *weibliche* Geschlecht, so kommt die Art *fortissima*, Pr., *ingentissima*, Pr. und *cestri*, Mlt. (= *cestrum*, Mlt. emend.) am nächsten; von letzterer Art ist sie gut zu unterscheiden durch die Form des 3. und 4. Fühlergliedes, welche am Ende deutlich geschnürt sind, während sie bei *cestri* (vgl. Moulton, 1926, Rev. Chil. Hist. Nat. **20** : 10, Taf. I, fig. 2) am Ende keine Konkavität zeigen; auch ist das Fühlerendglied bei *cestri* im Vergleich zum vorhergehenden viel länger (1·5–1·7 mal so lang als das 7.), während es bei *fallaciosa* nur 1·2–1·35 mal so lang ist. Bei *fortissima* und *ingentissima* ist die halsartige Schnürung, besonders am 4. Fühlerglied viel stärker ausgeprägt. Bei *ingentissima* sind die Längen des 3. und 4. Fühlergliedes 92, resp. 80 μ und das halbe 4. und 5. Fühlerglied sind *hellgelb*, die längste Borste am 3. Glied misst 66 μ. Bei *fortissima* ist die Basis des 4. und 5. Gliedes hellgelb und das 4. Glied ist nicht so kurz im Verhältnis zum 3., während es bei *fallaciosa* immer viel kürzer ist.

Fundort Mexico : Malinaltepec (Guerrera), iii.1930, in Blüten (*L. Schultze*) (No. 75).—Typen und Paratypen in der Sammlung des Berliner Museums.

Phlaeothripidae.

Symphyothrips skwarrae, sp. n.

Von *Symphyothrips punctatus*, Hood & Will., durch die viel bedeutendere Grösse, die auffallende Färbung und die abweichende Tubusform verschieden und vielleicht der Vertreter einer anderen Gattung, jedoch in der Kopf-und Fühlerform der genannten Art ähnlich.

♀ : Kopf, Vorderbeine, Metathorax, 1., 9. Abdominalsegment und Tubus braungelb, Prothorax, Mesothorax und 2. bis 8. Abdominalsegment dunkelbraun (das 2. bis 6. mit gelbem Hinterrand), Mittel-und Hinterschenkel mit Ausnahme der Spitze dunkelbraun, Tubusspitze mit bräunlichem Ring, alle Tibien und Tarsen hellgelb. Das 1. bis 3. Fühlerglied hellgelb,

das 3. am äussersten Ende getrübt, die folgenden Glieder dunkelbraun, das 4. im Ganzen etwas lichter als die Endglieder. Körperborsten hyalin. Die Vorderschenkel zuweilen getrübt, aber lichter als die Mittel-und Hinterschenkel. Rotes Pigment ist im Körper reichlich vorhanden, u. zw. im Kopf vorn, im Thorax und Abdomen, nur spärlich im Metathorax und in den beiden Endsegmenten des Abdomens, bisweilen auch im Prothorax nur spärlich.

Kopf sehr gross, mit verhältnismässig kleinen Augen, Länge samt Interantennalfortsatz 380, ohne diesen 345 μ, Breite hinter den Augen, wo die Wangen etwas eckig vortreten, 285 μ, nach hinten geradlinig etwas verengt oder fast parallelseitig; Wangen etwas rauh, Augen nur 78 μ lang, seitlich schräg abgeflacht; Ocellen auf der Kopffläche selbst, der vordere Ocellus ganz wenig hinter der Verbindungslinie der Augenvorderränder gelegen, den hinteren Ocellen näher als diese voneinander. Kopffläche undeutlich genetzt. Postokularborsten lang, etwa 120 μ, hyalin, oval geknöpft. Kopfseiten mit nur sehr feinen Borstchen. Mundkegel lang, am Ende ziemlich schmal abgerundet, erscheint spitzig, da der Mundstachel stark vortritt. Fühler 640–457 μ lang, direkt innerhalb der Augen eingelenkt, der Kopf daher ohne Gipfel. Fühlergliederlängen(-breiten): 52–60 (B. 64, Sp. 44), 80–84 (44), 104 (50), 116 (52), 104 (47), 92 (44), 92–96 (36) μ. Fühler demnach 7-gliedrig, das 7. und 8. Glied vollkommen miteinander verschmolzen, nur bei genauer Beobachtung ist eine kleine Querlinie sichtbar, die aber ungefähr nur 1/6 des Umfanges (der ursprünglichen queren Trennungslinie) einnimmt. Die Glieder sind vom 3. an etwas querwellig skulptiert, wie dies auch bei *Symphyothrips punctatus* der Fall ist. Das 3. Glied hat drei dünne, lange, haarartige Sinneskegel, das 4. Glied vier, das 5. hat 1 + 1 [1], das 6. wie das vorige, das 7. + 8. Glied hat einen dorsalen Kegel. Vorderschenkel schwach verdickt, wie die Tibien *ohne* Bezahnung, die Vordertarsen mit kräftigem, spitzigen Zahn. Pronotum 234 μ lang, samt Coxen 485 μ breit; Vorderrandborsten 72–80 μ lang, geknöpft, Hintereckenborsten 92–96 μ lang, wie die anderen hyalin, stark geknöpft; die inneren Hinterrandborsten ebenso. Pronotumfläche glatt. Flügel verkümmert; Flügelbasalborsten 2 u. 3 geknöpft, 76–84 μ lang. Mesothorax 407 μ breit, daher schmäler als der Prothorax. Mittel-und Hinterbeine ohne Besonderheit. Dorsalborsten des Abdomens geknöpft, die lateralen des 8. Segmentes etwa 128 μ lang; Borsten 1 des 9. Segmentes 144 μ lang, geknöpft, B. 2 haarspitzig, wenigstens 180 μ lang. Tubuslänge 242 μ, Breite am Grunde 96–98, am Ende 46 μ. Analborsten etwa 240 μ lang. Flügelsperrdornen sehr schwach.—Körperlänge (ziemlich gedehnt): 2·45–2·6 mm.

Fundort Mexico: Mirador (Ver.), 2 ♀♀, 4.v.29, an *Conostegia xalapensis*, (*E. Skwarra*) (Z 348).

Diceratothrips (Endaenothrips subgen. nov.) horridus, sp. n.

♂ (leicht ödymer): Braunschwarz, Dornen und Borsten am Körper und an den Extremitäten schwarz: Beine schwarzbraun, alle Tarsen bräunlich, 1. Fühlerglied dunkelbraun, das 2. ebenso, aber am Ende gelblich aufgehellt, das 3. hell bräunlichgelb, gegen die Spitze allmählich getrübt, das 4. an den basalen zwei Dritteln, das 5. in der Basalhälfte gelb, übrigens bräunlich getrübt, das 4. an der äussersten Basis schmal ringartig gebräunt, das 6. im Grunddrittel aufgehellt, die übrigen ganz dunkel. Flügel getrübt, und zwar durch einen verschwommen bräunlichen, breiten, zweiteiligen Mittellängsstreif, der im Enddrittel oder Endviertel aufhört; die Flügelbasis schmal getrübt.

Kopf länger als breit, samt Interantennalfortsatz 520, von den Augen ab 484 μ lang, an den Hinterecken der Augen 320, am zweiten Dorn 345 μ breit. Die Fühler nicht auf einem Fortsatz sitzend, direkt innerhalb der Augen entspringend. Diese seitlich kurz (113 μ), schräg stark abgeflacht; Wangenlänge hinter den Augen 415 μ. Ocellen in normaler Lage, ein stumpfwinkeliges Dreieck bildend, der vordere Ocellus auf der Kopffläche liegend, hinter

dem Niveau des Vorderrandes der Augen. An den Seiten des vorderen Ocellus je eine kurze (68 μ), starre, schwarze Dornborste. Postokularborsten sehr lang, 225–242 μ, dick und starr, am Ende mit heller Rundung, ihr Abstand voneinander 104 μ, Abstand von den hinteren Ocellen 52–70 μ, sie liegen demnach sehr weit vorn; das 2. Paar Postokularborsten ist rudimentär, steht 95 μ vom ersten ab (70 μ voneinander) und ist 43–52 μ lang. Scheitel querwellig skulpturiert. Wangen mit 1 kleinen, etwas unterseits gelegenen Borste hinter den Augen und 3–4 *sehr langen* (70–78 μ), *auf Protuberanzen sitzenden, dicken* (*bis* 12 μ), *schwarzen, stumpfen Dornen*. Mundkegel gegen das Ende verschmälert, schmal abgerundet, das 2. Glied der Maxillarpalpen ist etwa 87 μ lang. Fühler lang und dünn, 1·19–1·21 mm., daher mehr als doppelt so lang als der Kopf. Das 3. Glied ist viel länger als dies sonst bei dieser Gattung der Fall ist. Fühlergliederlängen(-breiten): 69 (B. 68, Sp. 52), 87 (44–46), 355 (48), 225 (46–48), 184 (41), 132 (34), 102 (31), 78 (21) μ. Das 1. Glied zum Ende stark verengt, das 2. schmal, die Areola etwas distal der Mitte, zwei kurze Dorsalborsten und eine stumpfe, innere Lateralborste (22 μ) sichtbar, das 3. Glied mehr als 7 mal so lang als am Ende dick, zum Ende gleichmässig, allmählich erweitert, ohne Keule, das 4. viel kürzer, die folgenden ohne Besonderheit, das 5. und 6. unten am Ende schwach vorgezogen und dort mit Börstchenreihe; das 3. Glied hat zwei Sinneskegel, das 4. vier, das 5. und 6. je zwei, das 7. hat einen dorsalen Kegel; das 8. Glied ist am Grunde etwas verengt. Prothorax kürzer als der Kopf, 285–294 μ lang, an den Vorderecken 363, hinten ohne Coxen 520, samt diesen (nicht gepresst) 588 μ breit; die Pronotumfläche ist deutlich genetzt, sowie dies auch für das Meso-und Metaskutum gilt, die Netzmaschen sind aber fein (cf. *Phlaeothrips coriaceus*). Vorderrandborsten gut entwickelt, aber nur mässig lang, die inneren messen etwa 60, die äusseren 85 μ, beide am Ende gerundet; Lateralborsten 70 μ, von den Hinterrandborsten sind die Eckenborsten sehr lang, etwa 225–240 μ, schwarz, am Ende mit hellem Knopf, die inneren Hinterrandborsten sehr kurz, etwa so lang wie die inneren Vorderrandborsten(!); Coxenborste kurz (52 μ), stumpf. Vorderschenkel stark verdickt, gegen das Ende sehr stark verschmälert, so dass sie vor dem Ende innen und aussen etwas konkav sind; ihre Breite am Ende etwa 113–122 μ, grösste Breite 320 μ. Die Innenränder der Vorderschenkel und die innere obere Fläche sind mit Stacheln besetzt, die Dornborsten entsprechen (aus Poren entspringend); der Innenrand hat 6–8 Stacheln und an der inneren, oberen Fläche sind etwa ebenso viele vorhanden. Am Aussenrand sind nur etwa zwei Paar kräftigere Dornborsten vorhanden, die aber abgestossen sein können. Vorderschienen lang, dünn und etwas gebogen, am Innenrande mit 5–7 sehr kleinen, von einander entfernten Tuberkeln besetzt. Vordertarsenzahn lang, dünn, dolchförmig, senkrecht abstehend, Vordertibien ohne Bezahnung. Mesothorax an den Ecken etwa 623, Metathorax 709 μ breit. Die Vorderflügel sind an der Basis mässig breit, 180 μ, erweitern sich aber gegen das Ende (216 μ), wo sie dann schmal abgerundet sind. An der Basis stehen drei ungleich lange (24 28, 92 u. 144–160 μ), schwarze, starre, stumpfe Borsten; ausser diesen sind 1–2 ganz kleine zu sehen. Zahl der Schaltwimpern 38–40. Die Mittel-und Hinterschenkel tragen mehrere dunkle starke Dornborsten, und zahlreiche kleine Börstchen. *Die Borsten am Abdomen sind sehr lang, schwarz und zuweilen wellig und laufen in eine haardünne Spitze aus;* bis zum 4. Segment sind sie aber kürzer und stumpf; am 7. Segment stehen z. B. zwei lange Haarborsten (570 μ), zwei kürzere (208–225 μ), nicht haarspitzige, und 1 kleine Borste (55 μ); Borsten am 9. Segment ähnlich, lang, haarartig, in eine dünne Spitze ausgezogen, B. 1, 2 etwa 657–744 μ lang. Es sind 3. Paar solcher Borsten vorhanden und 1 viel kürzeres, ventrales Paar. Tubus kurz, gleichmässig konisch, etwa 450 μ lang, an der Basis vielleicht 156, am Ende 64 μ breit. Terminalborsten kurz, die längste 360–380 μ lang.—Länge (Kopf und Thorax gedehnt, Abdomen kontrahiert): 3·7 mm.

Bei kräftigen Männchen sind die Vorderschenkel noch stärker verdickt, sie können eine Breite von 0·45 mm. erreichen, wobei auch die Stacheln auf der Innenseite kräftiger sind. Die Kopfstacheln sind stärker (95–105 μ lang) und 4 an der Zahl, sie sind auch hier alle vor der Mitte der Wangen gelegen und beginnen nicht direkt hinter den Augen. Vordertibien

stärker gekrümmt, an der Innenseite mit kräftigen, voneinander weit abstehenden Körnchen; Vordertarsenzahn sehr lang (173 μ), dünn, dolchförmig. Prothoraxbreite 690 μ. Schaltwimpernzahl 46–47. Tubus 520 μ lang, am Grunde 182, am Ende 61 μ breit. Im übrigen stimmt diese Form mit der vorigen (Type) überein.

♀: Unterscheidet sich vom ♂ durch die nur ganz schwach verdickten Vorderschenkel, die etwas schlankeren Stachel derselben, die undeutlicheren Höckerchen an der Innenseite der Vordertibien und das viel kürzere, schräg nach vorn gerichtete Tarsenzähnchen, das kürzer ist als die Tarsen breit sind. Im übrigen stimmt das ♀ mit dem ♂ überein, die Beborstung am Abdomen (drei Paar lange, schwarze Haarborsten) ist dieselbe.

Masse der ♀-Type: Kopf samt IAF 502, vom Augenvorderrand an 467 μ lang, an den Wangen 367 μ breit. Drei bis vier Paar Kopfstacheln, der erste 52 μ lang. Postokularborsten 242 μ lang. Fühlerlänge 1·125 mm. Gliederlängen(-breiten): 60 (B. 64, Sp. 46), 96 (44), 78 (44), 220 (45), 164 (40), 128 (36), 96 (32), 72–76 (20) μ. Pronotumlänge 225–242, Pronotumbreite ohne Coxen 520, samt Coxen 562 μ. Mesonotum an den Vorderecken 614 μ, Metanotum 718 μ breit. Schaltwimpernzahl 34. Tubuslänge 450, Breite a.d. Basis 165, an der Spitze 60 μ. Länge der Borsten am 9. Segment 690 μ. Vorderschenkelbreite 190–225 μ.

Der Darm dieser Art enthält reichlich Pilzsporen.

Die langen Fühler, speziell das lange 3. Glied derselben und die überaus kräftigen Dornen der Kopfseiten, die auf Höckern sitzen, machen die Aufstellung eines besonderen Subgenus nötig, das ich **Endacnothrips,** subgen. nov.* nenne.

Fundort Mexico: Mirador (Ver.), 9.v.1929, in Dornen von *Acacia cornigera* (L.)—Strauch (No. 412 c), Typen ♂♀;—Tamarindo (Ver.), 3.iv.29, in Dornen von *Acacia sphaerocephala*, Schleth. & Cham. (Paratypen ♂♀ (No. Z 33 (♀) u. Z 29 (♂)).—(*E. Skwarra*).

Die folgenden Larven gehören *vielleicht* zu dieser Art; sie sind gut charakterisiert und mit keiner der bisher bekannten Larven identisch.

Larve.

II. Stadium: Färbung weisslich, die stark chitinisierten Teile graubraun; ob rotes Pigment vorhanden war, kann nicht mehr festgestellt werden, ich setze es voraus. Dunkel sind: Die *ganzen* Fühler, Kopf-und Pronotumplatten, Beine, die üblichen Platten an der Basis der Borsten, Seitenplatten am 8. Segment (komplett), das ganze 9. und 10. Segment inclusive Analborstenring. Tibienenden und Tarsen heller. Der Darm ist mit zwei Arten Pilzsporen gefüllt.

Kopf etwas deformiert, Länge incl. Mundkegel etwa 570 μ. Die innere Augenborste 60 μ lang, schwach geknöpft oder offen, B. 1. der 2. Reihe ebenso, B. 2 nicht sichtbar. Fühler sehr lang und dünn, ihre Gliederlängen(-breiten): 44 (50), 84 (36), 308 (B. 30–Sp. 39), 152 (38), 98 (33), 76 + 52 (6. Gl. 26, 7. Gl. 16) μ; das 6. und 7. Glied vollkommen verschmolzen, 2. Glied mit zwei Knopfborsten, *das 3. Glied mit verhältnismässig kurzen Borsten* (1 Knopfborste 34–44 μ) und einem ziemlich geraden, spitzigen Sinneskegel (24 μ), Kegel des 4. Gliedes ebenso, am Uebergang des 6. zum 7. Gliede ein ebensolanger lateraler Kegel. Borsten am Pronotum kurz, geknöpft, B. 1: 38, B. 2: 40, B. 3: 56–60, B. 4: 40–44, B. 5: 36–40, B. 6: 96–108, B. 7: 30 μ. Basalplättchen am Mesonotum 76 μ breit, einschliesslich des dünnen Fortsatzes nach innen. Längste Borste am Metanotum (B. 6) 96–100 μ. B. 2 des 8. Abdominalsegmentes 80 μ, geknöpft, wie die übrigen Dorsalborsten. Länge des 9. Segmentes 225 μ, Breite 180–190 (unsicher, weil schräg liegend), deutlich etwas länger als breit; Länge des 10. Segmentes 277 μ. Borsten am 9. Segment kräftig, B. 1.2 am Ende abgerundet, etwa 240 μ lang, B. 3 am äussersten Ende etwas gekrümmt, fast ebenso lang, B. 4 etwa 400 μ, spitzig. Analborsten kürzer, etwa 165 μ.

* ἐνδάκνειν = Eindringen.

I. Stadium: Hier ist der macrothripoide Charakter des 3. Fühlergliedes nur undeutlich ausgebildet. Färbung wie vorhin, das 8. Segment ohne grosse Platten (nur Borstenplättchen), aber das 9. Segment fast zur Gänze chitinisiert. Fühler 570–588 μ lang. Gliederlängen(-breiten): 40 (48), 80–84 (42), 148 (B. 24, Sp. 46), 104 (40), 78 (38), 140 (34) μ. Das 2. Glied mit zwei offenen oder Knopf-Borsten, das 3. Glied mit 1 Knopfborste (48–52 μ) und 3 Spitzborsten, von denen die untere die längste ist. Sinneskegel am 4. Glied 28 μ lang. Die hinteren Borsten des Kopfes 52 μ lang. Das 6. und 7. Fühlerglied ohne Naht vereinigt, *das* 3. *Glied nach unten gekrümmt* (was nur von der Seite zu sehen ist). Prothorax, B. 1 und 2 sehr klein, spitzig, 12, bezw. 20 μ lang, B. 3–5 geknöpft, 44, 48–50, bezw. 24–32 μ lang, B. 6 fast spitzig, sehr lang, 144–180 μ. Die längste Borste am Metathorax 70 μ, schwach geknöpft; B. 1 am 1. Segment 32 μ, B. am 8. Segment 34–38 μ, schwach geknöpft oder offen. Der chitinisierte Teil des 9. Segmentes 116 μ lang, an der Basis etwa 136 μ breit, am Ende 118 μ, schwach nach hinten verengt. Borsten am 9. Segment (♂) haarartig, spitzig, etwa 260 μ. 10. Segment 165 μ lang. Analborsten kurz, vielleicht 160 μ.

Fundort Mexico: Mirador (Ver.), 22.v.1929, in Dornen von *Acacia cornigera* (Z 657) (*E. Skwarra*).

Diceratothrips inferorum, Pries.

Diese Art habe ich kürzlich nach einem einzigen Männchen aus Mexico (Pena Blanca, 15.xii.1924 (*A. Dampf*), M.B. 109) beschrieben; sie liegt mir nun in mehreren Exemplaren beider Geschlechter vor, die zeigen, dass das zuerst beschriebene Stück ein Weibchen, nicht Männchen ist. Das merkwürdige ist, dass die Weibchen dieser Art nicht nur verdickte Schenkel, sondern auch einen langen, dolchförmigen Tarsenzahn der Vorderbeine haben; so erklärt sich der Irrtum. Das ♂ stimmt zwar im Bau und der Färbung der Fühler mit dem Weibchen vollkommen überein, doch hat das *Männchen zahnförmig vorgezogene Vorderecken des Prothorax* und ganz leicht und undeutlich konkave Wangen, so dass sich diese Art einerseits *Eulophothrips* Schm., andrerseits *Lamillothrips* Bagn., einigermassen nähert.

Ich habe diese Art unter *Adiaphorothrips* beschrieben, sie ist aber doch besser bei *Diceratothrips* eingereiht.

♂: Färbung wie beim ♀; der Kopf ist bei der Type 380, samt Interantennalfortsatz 398 μ lang, an den Augen 266 μ breit; die Augen seitlich 104 μ lang, etwa nur die Vorderecken des Kopfes einnehmend, die Wangen ganz schwach konkav, auf ihnen sitzen zwei Paar starke Stacheln, die den Augen, bezw. dem Hinterrande des Scheitels näher stehen, als einander; der Scheitelrand ist hinten dick aufgewulstet, was besonders an den Seiten gut zu erkennen ist. Mundkegel breit abgerundet. Länge der Interocellarborsten etwa 80 μ. Postokularborsten lang, den Augen sehr nahe. Fühlergliederlängen(-breiten): 60–64 (52), 92 (40), 186–188 (44), 142 (42), 116 (40), 92 (36), 82 (32), 50 (17) μ. Das 3. Glied mit zwei, das 4. mit vier Sinneskegeln. Der Hinterrand des Kopfes ist in der Mitte etwas eingebuchtet, der Vorderrand des Pronotums stark bogig ausgerandet, *die Vorderecken des Prothorax sind stumpf zahnförmig vorgezogen*, der Zahn gehört schon dem Sternum an, das Notum ist an den Vorderecken gerundet. Prothorax 277 μ lang, ohne Coxen 485 μ breit. Vorderschenkel deutlich verdickt, nicht auffallend stärker als beim ♀, doch nahe der Basis innen etwas beulig vorgewölbt. Dornen fehlen, nur zarte Börstchen vorhanden. Tibien einfach, Vordertarsen mit langem, dünnen, dolchförmigen Zahn, der senkrecht absteht und etwas gebogen ist. Äussere Hintereckenborste des Prothorax dunkel, am Ende gerundet, etwa 160 μ lang, die innere klein, sie sowie die etwas nach innen gerückten (innerhalb des Zahnes stehenden) Vordereckenborsten, haben eine Länge von 44–48 μ. Pronotum undeutlich netzig skulptiert. Mesothorax 519–554 μ breit. Flügel gleichbreit, etwas

gebogen, wie beim Weibchen, fast gleichmässig braungelb getrübt. Schaltwimpern 32–33. Mittel-und Hinterschenkel aussen mit einigen starken Borsten. Abdomen mit langen, dunklen, z. Teil welligen Borsten, die in eine haardünne Spitze auslaufen und am 9. Segment etwa 433 μ messen, also ungefähr so lang sind wie der Tubus; dieser etwa 415 μ lang, am Grunde 120, am Ende—hier deutlich plötzlich zusammengezogen—52 μ breit.—Gesamtkörperlänge (etwas kontrahiert): 2·94 mm.

Fundort: Die Allotype (♀) und Paratypen (♂♀) stammen aus Mexico: Mirador (Ver.), 20. und 28.iv.1929, von *Conostegia xalapensis* (Melastomaceae) (*E. Skwarra*) (No. Z 295, bezw. Z 209 f).

Diceratothrips pallidior, sp. n.

♀: Schwarz oder braunschwarz, das 2. Fühlerglied am Ende aufgehellt, das 3. Glied hell, *weisslichgelb*, am Ende getrübt, die folgenden Glieder ganz schwarz. Beine Schwarz, nur der Zahn der Vordertarsen heller. Die Flügel viel lichter als bei *inferorum*, ganz blass gelblich getrübt, die Hinterflügel vollkommen hyalin. Borsten am Körper ganz dunkel.

Kopf 380, samt IAF 398 μ lang, an den Hinterecken der Augen 250, am kragenartig abgesetzten Basalrand 277–286 μ breit. Wangen mit zwei Paar mässig langen Stacheln, die voneinander weiter abstehen, als jedes Paar von den Augen, bezw. vom Kopfhinterrand. Augen lateral 104 μ lang, dorsal ebenso. Postokularborsten lang, gut 120 μ, dunkel, am Ende abgerundet, den Augen sehr nahe, etwa nur 16 μ von ihnen entfernt. Die hinteren Ocellen stehen etwas vor der Mitte des Augeninnenrandes; Mundkegel kurz, breit gerundet. Interocellarborsten gut entwickelt, aber viel kürzer als die Postokularborsten. Fühler 813–830 μ lang, bei schwächeren Stücken nur 744 μ (3. Gl. 164 (38), 4. Gl. 132 (42) μ). Fühlergliederlängen(-breiten) d. Type vom 2. Gliede an: 96–100 (40), 192 (42), 152 (44), 124 (39), 100 (27), 80 (32), 56 (18) μ. Das 3. Glied mit 1, das 4. mit 4 kurzen Sinneskegeln. Pronotum am Vorderrand stark gebuchtet, 225–260 μ lang, ohne Coxen 440–493 μ, samt diesen 484–545 μ breit; Vordereckenborsten weit nach innen gerückt, 52–56 μ, die inneren 40; die inneren Hinterrandborsten 100, die äusseren etwa 150 μ lang. Coxenborste 56–62 μ lang. Vorderbeine etwas verdickt, bei der Type sind die Schenkel 173 μ lang; die Vordertarsen haben einen langen, dünnen, spitzigen Zahn, der fast senkrecht absteht. Pterothorax über den Mittelhüften am breitesten, nach vorn und hinten schwach verengt, 520–588 μ breit. Flügel 1·52–1·54 mm. lang, die basale Borstenplatte *hell*, nur die Schuppe etwas getrübt, die Borsten gelblich, 44, 52 und 132–136 μ lang, am Ende abgerundet. Flügel schmäler als bei *inferorum*, an der breitesten Stelle vor dem Ende 120–145 μ (bei *inferorum* etwa 208 μ) breit. Zahl der Schaltwimpern 25–28. Das 3. bis 6. Abdominalsegment mit je 1 Paar gekrümmter Sperrdornen. Lateralborsten am 7. Segment etwa 260 μ, am 8. Segment B. 2, 3: 138 bezw. 173 μ lang. B. 1 u. 2 des 9. Segmentes dick, wie B. 3 des 8. Segmentes, aber länger, 328–363 μ; die Borsten sind schwarz, gegen das Ende aufgehellt. Tubus 398–433 μ lang, am Grunde 114–132, am Ende 55–58 μ breit. Analborsten 188–192 μ.—Gesamtkörperlänge (gedehnt): 4·1 mm.

Mexico: Alvarado (Ver.), 30.i.1929, mehrere ♀♀ (Holotype & Paratypen), geketschert auf den Dünen (No. 23b); 1 ♀ (Paratype) Mirador, 20.iv.29, an *Conostegia xalapensis* (No. Z 209 f) (*E. Skwarra*).

♂ unbekannt.

Diese Art ist *D. inferorum* sehr ähnlich, unterscheidet sich aber besonders durch das hellgelbe 3. Fühlerglied, die lichten Flügel, die geringere Zahl Schaltwimpern und die deutlich geringere Breite der Flügel. Es ist bedauerlich, dass das Material kein Männchen enthielt, es kann aber angenommen werden, dass sich auch das Männchen durch die Fühlerfärbung leicht unterscheiden lassen wird.

Elaphrothrips bilineatus, sp. n.

♂: Braunschwarz, Vordertibien gleichmässig verschwommen dunkelgelbbraun, die Mittel-und Hintertibien dunkler braun, gegen das Ende ganz wenig aufgehellt, Tarsen braun, die vorderen dunkel gelbbraun. Die grosse Sichelborste dunkel, Kopfstacheln und Körperborsten mit Ausnahme derer des Abdomens dunkel. An den Fühlern ist das 3. Glied gelb, am Endknopf getrübt, das 4. in der Basalhälfte bräunlichgelb (etwas wolkig getrübt), am Ende (2/5) dunkel, das 5. in der Grundhälfte aufgehellt, aber nicht gelb, sondern braun, die folgenden ganz dunkel. Flügel fast glashell, *mit zwei starken, dunkelbraunen Längsstreifen, von denen der kürzere, äussere etwa das Ende des ersten Viertels des Flügels erreicht,* der andere, doppelt so lange, die Flügelmitte überragt; an der Basis, *zwischen* den beiden Streifen, liegen die Flügelbasalborsten. Borsten am Abdomen licht, die des 9. Segmentes und die Analborsten leicht gelblich.

Kopf ohne Gipfel dorsal 528, samt Gipfel 583 μ lang, an den Augen 224, hinten 211–216, an der engsten Stelle, hinter den Augen 183 μ breit. Kopfgipfel 120 μ breit, 62 μ lang, also etwa 1·8–1·9 mal so breit als lang. Die hinteren Ocellen weit vor der Mitte der Netzaugen, die Interocellarborsten gut entwickelt, die Postokularborsten abgestossen, aber ihre Poren deutlich, 40–44 μ von den Augen abstehend. Augenlänge lateral (wo sie am längsten sind) etwa 148 μ. Wangendörnchen dunkel, aber zart und schwach, etwa 28–32 μ, der erste hinter den Augen 40–44 μ lang. Hinter den Augen keine Schläfen abgesetzt, die engste Stelle des Kopfes, daher knapp hinter den Augen. Fühlerglieder längen(-breiten) vom 3. an: 180–188 (40), 148–152 (40), 138 (36), 116–120 (30), 84 (26), 76 (18) μ. Das 3. Fühlerglied mit drei, das 4. mit vier Sinneskegeln. Die Knopfborste am 3. Glied misst etwa 68–72 μ. Pronotum 208 μ lang, fast 400 μ breit, die Seiten in der Mitte wie bei anderen Arten etwas eckig vortretend; die Vordereckenborsten nur mässig lang, ziemlich weit nach innen gerückt, 66 μ, die inneren Vorderrandborsten sehr klein, die äusseren Hintereckenborsten etwa 100 μ, die inneren viel kürzer, 68–72 μ lang. Vorderschenkel verdickt, Aussenborsten wenig kräftig, Sichelborste stark, Vorderschienen kräftig, *innen am Ende etwas höckerartig vorgezogen,* Vordertarsen mit schmalem, kräftigem Zahn. Pterothoraxbreite 536 μ, Flügellänge 1·5 mm. Basalborsten der Flügel 48, 56, bezw. 60 μ lang, die beiden ersten nicht ganz scharf oder abgerundet. Schaltwimpernzahl 27–29. Borsten am 9. Segment haarartig, 345–365 μ. Tubus etwa 398 μ lang, am Grunde 104 (?), am Ende 58 μ breit. Terminalborsten kurz, etwa 295 μ.

Fundort 1 ♂, Mexico: Alvarado (Ver.), 30.i.1929, an unbekannter Pflanze in den Dünen (*E. Skwarra*) (23b).

Unter den amerikanischen Arten, bei denen der Kopfgipfel mindestens 1·7 mal so breit als lang ist, und bei denen Postokularborsten wohl entwickelt sind, hat *angusticeps,* Crawf. stärker gewölbte Augen, so dass der Kopf hier 1·1 mal so breit ist als hinten; bei *tener,* Pr. sind die Vorderschienen hellgelb, am Innen-und Aussenrand dunkel, währned die Borsten am 9. Segment dunkel sind, welch letzteres auch für *angusticeps* zutrifft; bei *tener* ist der Kopf nur 2·4 mal so lang als breit (bei *bilineatus* 2·6 mal) und die Kopfstacheln sind besser entwickelt. Ueberdies ist die Färbung der Flügel markant und die Sichelborste gross, bei gleichzeitig schwacher Entwicklung der Schenkel.

Elaphrothrips schultzei, sp. n.

♀: Samt Beinen, 1., 2. und 6. bis 8. Fühlerglied, schwarz; das Glied hellgelb, im Enddrittel schwarz, das 4. zur Hälfte mehr oder weniger hell braungelb, Endhälfte schwarz, das 5. etwa im Grunddrittel braungelb, sonst schwarz, das 4. und 5. Glied auch an der äussersten Basis schmal gebräunt. Kopfstacheln schwarz, Borsten am Kopf, Prothorax und Abdomen gelblich bis bräunlich. Flügel fast hyalin, mit gelbbraunem Längsstreif,

der mehr oder weniger die Mitte erreicht, ferner ebensolchem zweiten Streif, der aber die farblose Borstenplatte kaum überragt und undeutlich sein kann.

Kopf samt Gipfel 683, von den Augen ab 614 μ lang, an den Augen 320, an der schmalsten Stelle 272, hinten 306 μ breit. Hinter den Augen ganz kurze Schläfen erkennbar. Kopfgipfellänge 70, Breite 164–166 μ. Wangen mit 5–6 dunklen, mässig langen Kopfstacheln, der erste 40 μ lang. Interocellar-und Postokularborsten lang, gelblich. Augenlänge 156 μ. Fühlerlänge etwa 1·03 mm. Gliederlängen(-breiten) vom 3. an: 260 (52), 190 (54), 156 (48), 124 (40), 88 (32), 80 (24) μ. Das 8. Glied am Grunde verengt, das 3. mit zwei, das 4. mit vier Sinneskegeln. Die längste Borste am 3. Glied misst nur 56 μ, keine ist deutlich geknöpft. Prothorax 329 μ lang, ohne Coxen etwa 570, samt diesen 700 μ breit. Vordereckenborsten gut entwickelt, etwa 100, die Hintereckenborsten gut 200 μ lang, alle gelblich, oder nur *schwach* bräunlich verdunkelt. Coxenborste 120–138 μ. An den Vorderschenkeln findet sich die bei *tuberculatus* kräftige Beule nur ganz schwach angedeutet (in gewisser Lage sichtbar), die Schenkel der Type haben eine Dicke von 235 μ. Vordertibien ohne Besonderheit, die Vordertarsen mit kurzem, schwach nach vorn gerichteten Zahn, der *bei allen Stücken am Ende schräg abgestutzt ist.* Vorderschenkel am Ausenrande mit sehr ungleich langen Borsten, die längsten von ihnen sind gelblich. Mesothorax 0·78–0·795 mm. Metathorax 0·839 mm. breit. Länge der Vorderflügel etwa 2·4 mm. vor dem Ende ca. 240 μ. Basalborsten gelblich, 124, 100 und 260 μ lang, fast spitzig. Schaltwimpernzahl 47–54. Borsten am 9. Segment wie die übrigen Abdominalborsten gelblich, bisweilen schwach bräunlich getrübt, 605 μ lang. Tubus etwa 640 μ lang, am Grunde 155–165, am Ende 78 μ breit; der Tubus ist im letzten Drittel stark verengt. Analborsten etwa 450 μ lang.—Körperlänge (etwas gedehnt): 5·95 mm.

Fundort Mexico: Chilapa (Guerrera), 29.10., aus Detritus (*Prof. L. Schultze*) (No. 37).—♀ Holotype und ♀♀ Paratypen in der Sammlung des Berliner Museums (Ir. No. 4790/30).

Diese Art kann wegen des kurzen Kopfgipfels und des langen Tubus, nur mit den Arten *tuberculatus*. Hood und *priesneri*, Bagn. (= *breviceps*. Pr. *nec* Bagn.) verglichen werden. Die erstere Art hat aber nicht nur viel schwächere, stärker gehöckerte Vorderschenkel, sondern auch längeren Kopfgipfel, im Verhältnis zum Kopfgipfel viel grössere Augen und an der Basis hellgelbes 6. Fühlerglied; auch sind die Vordereckenborsten des Pronotums viel kürzer. Die letztere Art hat schwächere Kopfdornen, viel stärker vorgewölbte Augen; der Kopf ist an den Augen 1·2 mal so breit als hinten, der Vordertarsenzahn ist anders gestaltet und die Borsten am Prothorax sind stärker getrübt, ebenso die des 9. Abdominalsegmentes: diese sind so lang wie bei *schultzei*, aber der Tubus ist bei *priesneri* viel kürzer (605 μ) und zur Spitze gleichmässig geradlinig verengt.

Liothrips antennatus, sp. n.

♀: Ganz schwarz, die ganzen Beine dunkel, die Tarsen kaum heller. Borsten am Körper dunkel. Vorderflügel hell, mit dunklem Längsstreif, der an der Basis, wo die Borsten stehen, verbreitert ist und etwa im Endviertel oder im Endfünftel endet. Hinterflügel mit dünner Längslinie. Fühler dunkel, 3. Glied hellgelb, am äussersten Ende ganz schwach getrübt.

Kopf 345, samt Höcker, auf dem der Frontocellus sitzt, 363 μ lang, an den Augen 225 μ breit, demnach 1·5–1·6 mal so lang als breit. Wangen ganz schwach nach hinten verengt, fast parallelseitig, hinten etwas stärker eingezogen. Augen seitlich und dorsal 104 μ lang, länger als bei *similis*, Bagn. Postokularborsten sehr lang, länger als die Augen, gebogen, schwarz mit hellem Ende. Mundkegel zugespitzt. Fühler schlank, ähnlich wie bei *similis*, mit gestreckteren Gliedern als bei *varicornis*, Hood und *zeteki*, Hood, das 3. Glied minde-

stens 140 (36) μ lang (breit), jedoch wegen ungünstiger Lage nicht genau messbar, mit 1 Sinneskegel, das 4. etwa 116–124 μ lang, mit 1 + 2^{+1} Sinneskegeln, das 5. mit 1 + 1^{+1}. Masse vom 4. Gliede an: 116–124 (45), 104 (39), 84 (36), 72–76 (30), 40–42 (16) μ. Das Endglied, von oben gesehen, gegen das Ende scharf zugespitzt. Prothorax nur 173 μ lang, ohne Coxen 415, samt diesen 476 μ breit; alle Borsten schwarz, wohl entwickelt, am Ende mit schmalem, weissen Knöpfchen; die Vordereckenborsten sehr deutlich, die lateralen viel länger, die Hintereckenborsten etwa 172 μ lang. Pterothoraxbreite 520–606 μ. Beine wie gewöhnlich, die Vorderschenkel etwas, aber wenig dicker als die übrigen, Tarsen einfach, ohne Spur eines Zahnes, die Vorderschenkel innen nahe der Basis, wie gewöhnlich, mit einer langen Borste. Flügel etwa 1·38 mm. lang, nur mässig (in der Mitte etwa 108 μ) breit, ihre Basalborsten schwarz, mit weissem, stumpfen Ende, 88, 108 und 112 μ lang. Schaltwimpernzahl 16–20. Borsten an den Seiten des Abdomens dunkel, die des 7. Segmentes länger als die des 8., das weissliche Ende der Dorsalborsten nicht scharf, eine Lateralborste des 7. Segmentes misst 200 μ, des 8. Segm. 136 μ. Borsten am 9. Segment haarscharf zugespitzt, B. 2 etwa 300–320 μ lang. Tubus 294 oder 310 μ lang, am Ende 51 μ breit. Terminalborsten im Endabschnitt ganz licht, Länge etwa 255 μ.

Fundort Mexico: Cuernavaca (Mor.), 1.x.1928, an Guayaba-Busch.— 2 ♀♀ (Holotype und fühlerlose Paratype), leg. *E. Skwarra* (No. B. 6).

Unter den Arten, bei denen der Kopf mindestens 1·4 mal so lang als breit ist, die Beine und auch die Fühler mit Ausnahme des ganzen dritten Gliedes dunkel sind, das sind: *zeteki*, Hood, und *similis*, Bagn., ist die neue Art von ersterem durch die viel längeren Fühler, von letzterem, dem sie am nächsten steht, durch die längeren Endglieder der Fühler und den etwas weniger gestreckten Kopf, der bei *similis*, Bagn., 1·75 mal so lang als breit ist, verschieden. Auch scheint der Tubus bei *similis* etwas kürzer zu sein, die Augen sind deutlich kürzer als bei der neuen Art.

Phthirothrips, gen. nov.

Fühler 7-gliedrig, Naht zwischen 7. und 8. Fühlerglied zuweilen zur Hälfte angedeutet; das 2. Fühlerglied tönnchenförmig, areola nahe der Spitze, das 3. Glied sehr klein (cf. *Lissothrips*). Kopf etwas breiter als lang, Augen klein, aus wenigen Facetten bestehend, jedoch vortretend. Ocellen fehlen. Wangen ungefähr parallelseitig. Mundkegel breit abgerundet, Oberlippe stumpf. Prothorax länger als der Kopf und viel breiter. Körperborsten lang, dünn, gerade, geknöpft. Pterothorax sehr reduziert, Flügel fehlen vollkommen. Abdomen breit oval, Tubus kurz konisch. Sehr kleine Tiere.

Typ. gen. *Phthirothrips pediculus*, sp. n.

Die Gattung gehört zu den Hoplothripini. Sie kann wegen des Kopf- und Fühlerbaues nicht in die Nähe von *Allothrips*, Hood, *Lissothrips*, Hood und *Bryothrips*, Pr. gestellt werden, sondern steht ziemlich isoliert; sie hat auch mit *Logadothrips*, Pr. und *Austrothrips*, Brth. nichts zu tun. *Acallurothrips*, Bgn. und *Coenurothrips*, Bgn. haben am Grunde gerippten Tubus und grössere Augen, das letztere gilt auch für *Neocecidothrips*, bei welcher Gattung auch die Ocellen immer vorhanden sind und der Prothorax kürzer ist als der Kopf.

Phthirothrips pediculus, sp. n.

(Fig. 1 u. 2)

♀: Dunkelbraun bis schwärzlich, Vorderschenkel innen am Ende gelblich, Vordertarsen zum Teil gelblichbraun. Kopf in der Vorderhälfte etwas lichter, grau-gelbbraun, der Tubus gegen das Ende kaum merklich lichter als in der Grundhälfte. Das 1. Fühlerglied wie der Kopf gefärbt, das 3. bis 7. (+ 8.) dunkel graubraun, die Endglieder dunkler als das

3. oder 4., *das zweite Glied weisslichgelb*. Körperborsten wenig getrübt, mehr oder weniger dunkel graugelblich.

Kopf vom Hinterrand bis zum IAF 88, von den Augen an 74 μ lang, an den Augen 100, hinten 104 μ breit. Augen klein, vorspringend, aus wenigen Facetten zusammengesetzt, so dass am Rande, von oben, nur drei zu sehen sind, es sind aber im Ganzen mehr als 10 vorhanden; laterale Augenlänge 28 μ. Wangen geradlinig, parallel oder nach hinten ganz wenig erweitert. Scheitelhinterrand dunkel, dick. Körper *ohne* Netzstruktur. Postokularborsten sehr lang, gerade, geknöpft, von den Augen nur sehr wenig (höchstens 4 μ) entfernt, 60 μ lang. Ocellen fehlen, an Stelle der hinteren Ocellen nehmen die Scheitelmitte zwei *winzige* Borstenporen ein. Mundkegel sehr kurz, sehr breit gerundet, Oberlippe ganz stumpf. Fühlerlänge 250 μ. Gliederlängen(-breiten): 24 (B. 28, Sp. 22), 36 (26), 24 (16), 28 (20), 32 (20), 40 (19), 66–68 (18) μ. Das 1. Glied zum Ende verschmälert, kurz, das 2. gross, seitlich stark gerundet, areola nahe am Ende, das 3. Glied sehr klein, viel schmäler und kürzer als das 2., die folgenden an Länge zunehmend, jedes mit dickem Stielchen. 3. Glied ohne Sinneskegel, 4. mit 1 grossen, innen, 5. mit $1 + 1^{-1}$, 6. mit $1 + 0^{-1}$, 7. + 8. mit 1 dorsalen. Das 7. und 8. Glied miteinander entweder vollkommen verschmolzen, ohne Naht, oder die Naht zwischen den beiden Gliedern ist nur oben angedeutet,

FIGS. 1–2.—*Phthirothrips pediculus*, gen. et sp. n., fig. 1, male; fig. 2, antenna of male.

unten fehlt sie immer. Prothorax länger und viel breiter als der Kopf, 100-108 μ lang, 220–224 μ breit. Zwei Paar Vorderrandborsten, die von den Ecken weit abgerückt sind, 32–34 μ lang, geknöpft, wie die übrigen Prothoraxborsten; Lateralborsten 56, Hintereckenborsten 64–68 μ lang, alle schlank, gerade; Coxenborste lang, dünn, geknöpft. Vorderschenkel kurz, kaum stärker als die Mittel-und Hinterschenkel, Vordertibien kurz und kräftig, Vordertarsen ausser der Klaue mit einem weit gegen das Ende gerückten, schräg nach vorn gerichteten Zahn (cf. *Karnyothrips*). Pterothorax äusserst reduziert, mehr als doppelt so breit als lang, 260 μ breit, 104 μ lang. Metathorax seitlich stark gerundet, so kurz wie ein Abdominalsegment. Flügel fehlen. Abdomen breit oval, am 2. bis 4. Segment etwa 355 μ breit, die Segmente stark quer, das 4. ist nur 68 μ lang. Tarsen kurz und dick. Borsten am Abdomen lang, dünn, gerade, die dorsalen geknöpft. B. 1 des 9. Segmentes am Ende fast spitzig, wie die anderen sehr zart und hell, 124, B. 2 : 112, B. 2a sehr fein, etwa 40 μ lang. Tubus konisch, 92–98 μ lang, am Grunde 54, am Ende 26 μ breit. Terminalborsten mässig lang, sehr dünn.—Körperlänge (sehr stark gedehnt) : 1·1 mm.

♂ : Länge (gedehnt) nur 0·69 mm., dürfte einer der kleinsten Phloeothripiden sein. Färbung wie beim ♀, die Tarsen etwas lichter. Kopf von den Augen an 60, samt IAF 70 μ lang, an den Augen 78 μ breit. Postokularborsten 44 μ lang. Fühlerlänge 188 μ. Gliederlängen(-breiten) : 16 (22), 28 (22), 20 (16), 22 (19), 26 (19), 28 (18), 48 (17) μ. Vorderbeine etwas kräftiger als beim ♀, das Tarsenzähnchen etwas grösser. Prothorax 92 μ lang, ohne Coxen 160 μ breit. Pterothorax 160 μ breit, Seiten gerade. B. 1, 3 des 9. Segmentes 92–96 μ. Tubus mit tiefer unterer Basalausrandung, sehr kurz, 60 μ lang, am Grunde 44, am Ende 22 μ breit, demnach nur 1·3 mal so lang als am Grunde breit.

Fundort Liberia, aus Mulm und Moos. Von *Dr. M. Sellnick* eingesandt.

ON THE SPECIES OF *LABIENUS* (COL. PASSALIDAE) RELATED TO *L. TRIGONOPHORUS*, ZANG

By W. D. Hincks, M.P.S., F.R.E.S.

The species of the Passalid genus *Labienus* allied to *trigonophorus*, Zang, 1905, following Gravely's arrangement (1918, *Mem. Ind. Mus.*, **7** : 106), may be separated from the rest of the genus by the undernoted characters :—

" The secondary scars on the mentum convergent behind, curved or straight, not very widely separated as a whole; the outer tubercles simple; the grooves of the elytra punctured."

In this section besides *L. trigonophorus*, Zang, 1905, Gravely has a new species, *L. inaequalis*, which, up to the present, has remained unknown to me. I now add an interesting new species and a form which I regard at present as a variety of *L. trigonophorus*. The last-named species has been well treated by Gravely (1913, *Mitt. naturh. Mus.*, Hamburg, **30** : 104) under the generic name of *Kaupioloides*. I have seen a number of specimens of this from several localities in New Guinea.

L. inaequalis, Gravely, is described and figured (1918, *Mem. Ind. Mus.*, **7** : 104) from Hattam, Arfak, Dutch New Guinea.

Below is a table of the four forms that I now propose to include in this section, based on that of Gravely (1918, *l.c.*, p. 104).

1. The left outer tubercle much longer than the right; the mentum without distinct primary scars . . . . . *L. inaequalis*, Grav., 1918.
   The left outer tubercle scarcely longer than the right; the mentum with primary scars . . . . . 2.

2. The thorax with a distinct median line; frontal ridges distinct in front of the inner tubercles; antennal lamellae not very short, normal . . . . . 3.
The thorax without a median line; frontal ridges obsolete in front of the inner tubercles; antennal lamellae very short . . . **L. protomocoeloides,** sp. n.
3. Frontal ridges semicircular; anterior angles of thorax rectangular. L. 32–35 mm. . . . . *L. trigonophorus* (Zang), 1905.
Frontal ridges not semicircular; anterior angles of thorax rounded. L. 43 mm. . . . . var. **proximus,** var. n.

Labienus protomocoeloides, sp. n.

The first three antennal lamellae are very short, the last three are short, shorter than in any species of *Labienus* known to me. The mandibles have complete dentition and are similar to those of other *Labienus*. The labrum is also of the usual type of the genus having the anterior margin only lightly concave, but it differs in puncturation from that of *L. trigonophorus* in bearing only a few large punctures but numerous small ones. The head (fig. 3) bears some small punctures on the anterior part and in the depressed areas; its general surface is shining and glossy. The frontal area is dull and minutely granulate with a dull, raised longitudinal line in the centre. The frontal ridges are obsolete in front of the inner tubercles. The inner tubercles are obtuse and situated a little closer together than are the outer tubercles. The latter are simple and very obtuse. Between the frontal area and the supraorbital ridges there is a cavity similar to that seen in *Protomocoelus*, a little deeper on the left side than on the right, but on neither side so deep as is usually the case in *Protomocoelus*. Compared with *L. trigonophorus*, which the species resembles in several respects, the eyes are considerably less prominent, the frontal area and outer tubercles are very different and *L. trigonophorus* is without the cavities above mentioned. The central tubercle in the present species is much more distinct from the parietal ridges than is the case in *L. trigonophorus*. The mentum resembles that of the last named in having primary scars and in having the secondary scars not widely separated and convergent behind. In the present species the scars meet behind much as described by Gravely for his *L. inaequalis*. The piece so cut off is, however, smaller than that indicated by Gravely in the figure of the mentum of *L. inaequalis*; the basal strip behind the scars is closely covered with small punctures.

The thorax resembles very much that of *Protomocoelus*. The median groove is absent. In the anterior angles near the end of the marginal groove there is a shallow depression. The scars take the form of large oblique depressions which are hairless and impunctate. The underside of the hind angles is covered with thick brown hair more prominently than in *Protomocoelus australis* (Boisd.), 1835. The grooves of the elytra are all punctured very much as in *P. australis*. *L. trigonophorus* is similarly sculptured but the punctures of the dorsal grooves are less distinct.

The mesosternal scars are more or less triangular and rugose; the disc is smooth and impunctate.

The characters of the metasternum and abdomen are practically the same as those of *L. trigonophorus*. The lateral and intermediate areas of the metasternum are granulate, closely punctured and covered with hair, which is shorter than that similarly situated on *L. trigonophorus*. The disc is impunctate and the posterior intermediate areas bear a few punctures.

Length, 33 mm.

The type, unique in coll. Hincks & Dibb (no. 5776).
Finschhafen, ex-German New Guinea.

This species bears a strong superficial resemblance to *Protomocoelus australis* (Boisd.), 1835, and *P. heynei* (Kuw.), 1891 (*P.* sp., Hincks & Dibb, 1932, *Ent. Mon. Mag.*, **68**: 221), and indeed presents some of the minor characters

previously exhibited exclusively by *Protomocoelus*.* On the other hand, *L. protomocoeloides* is obviously related to *L. trigonophorus* but differs in several important details.

The characters of the mandibles leave no doubt as to which genus the species should belong. In *Protomocoelus*, of course, the dentition is reduced whilst that of *Labienus* is normal.

The antennal lamellae, head cavities, characters of the thorax with its obsolete median groove and the puncturation of the elytra are closely reminiscent of *Protomocoelus*, whilst the mandibles, form of outer tubercles and mentum characters are those of *Labienus*.

L. trigonophorus, however, shares with *L. protomocoeloides* a similar puncturation and several *Labienus* have antennae approaching those of the last-named species.

It may be mentioned here that Kuwert (1898, *Nov. Zool., Tring*, **5**: 321) has described two species of *Protomocoelus* (*Pelops*) which will probably have to be transferred to *Labienus*, possibly in the capacity of synonyms. Both are characterised by having a complete median thoracic groove and an almost entire labrum. These are Kuwert's *Pelops otiosus* and *labiinotus*, and I shall have occasion to say more of them in a later note.

Labienus trigonophorus (Zang) **proximus,** var. n.

Size considerably larger, 43 mm. (*L. trigonophorus*, 32–35 mm.). The anterior margin of the head between the outer tubercles is straight; the outer tubercles are smaller and less prominent. The frontal ridges are not semicircular as in *L. trigonophorus*. The inner tubercles are more widely separated from one another and consequently nearer to the outer tubercles. From the inner tubercles the frontal ridges are straight and diverge strongly to the outer tubercles. The appearance of the ridges and outer tubercles is symmetrical (fig. 2). In *L. trigonophorus* the semicircular ridges and the outer tubercles have a distinctly asymmetrical appearance (fig. 1).

1 2

3

The anterior angles of the thorax, when viewed from above are rounded. The hair on the underside of the thorax and sides of the metasternum is shorter than that similarly placed in *L. trigonophorus*. The posterior intermediate areas of the metasternum are impunctate. A much larger, more flattened form.

Type, unique, in coll. Hincks & Dibb (no. 5717).

Mt. Goliath, 5000–7000 ft. Central Dutch New Guinea, about 139° long. Feb. 1911 (*A. S. Meek*).

When more material is available, this will probably prove to be a distinct species. At present it is regarded as a variety of *L. trigonophorus*, to which it is closely related.

* This species also exhibits some of the characters of *Cetejius* but is at once separated therefrom by having the lateral and intermediate areas of the metasternum fused as in all *Labienus* and *Protomocoelus*.

A PSOCID ALLIED TO *EREMOPSOCUS INFUMATUS* McLACHLAN (PSOCOPTERA)

By J. V. Pearman, F.R.E.S.

Many of the older descriptions of Psocids are so general in their terms that there is often uncertainty in identifying the species to which they relate. A difficulty of this nature has arisen with some specimens, received at the Imperial Institute of Entomology from Venezuela, which appear to agree in most respects with McLachlan's *Eremopsocus infumatus* from Brazil (1865–7, *Trans. Ent. Soc. Lond.*, (3), **5**: 347–8). The types of McLachlan's species (and genus) are stated to be in the Oxford Museum, but when the writer visited there, although Mr. J. Collins very kindly spent a long time in searching for them, the specimens could not be found. It is therefore impossible to establish the identity of the Venezuelan insects with McLachlan's species, but it is practically certain that they fall within his genus. A somewhat similar, but smaller, species from Colombia was described by Kolbe under the name *Syngonosoma flagellicorne* (1883, *Stett. Ent. Ztg.*, **44**: 78–9). Kolbe contrasted some of the characters of *Eremopsocus* and *Syngonosoma*, but on testing the Venezuelan insects by these it becomes a matter of difficulty to decide to which genus they should be assigned, and one is inclined to agree with Enderlein in treating Kolbe's genus as a synonym of the other. The slight differences between the specimens from the three countries suggest that we may have to deal with a "critical complex"—of which there are several cases in the family Psocidae—where species resembling one another externally can be separated by differences in structures that must be dissected out for satisfactory examination. By the courtesy of Sir Guy Marshall, I have been permitted to make dissections from the Venezuelan specimens, and am thereby enabled to figure those features by which species or subspecies can be more sharply differentiated. While the identity of the insects remains in doubt, it is deemed advisable to catalogue them as a subspecies, leaving questions of generic and specific distinction to be decided when specimens become available for study from Brazil and Colombia.

Eremopsocus belongs to that large natural section of the family Psocidae which includes the genus *Cerastipsocus*, Kolbe, and reaches its highest development in America, although it is represented in the Old World also (one species occurring in Britain). From what is at present known, these Psocids are notable for the marked development of the antennae, which are always long and in some cases thickened, for the large number of eggs laid at one time by the females,* and for the close-herding habits of the nymphs, which latter have rather long, shaggy body ciliation and are devoid of the mushroom-shaped gland-hairs typical of the nymphs of certain other groups. All the Cerastipsocine species whose morphology is known have common genitalic specialisations. The subgenital plate of the females has a short, terminally rounded, apical extension (the "egg-guide" of Chapman), and the principal element of its pigmented ornamentation is a cross-bar with widened ends, often combined with other markings in a T-shaped pattern; the posterior female gonopod ends in a tiny papilla. The male hypandrium is a more or less denticulate capsule, or hood, covering the "phallic sclerite" (= fused parameres), the latter having the form of a collar-like ring with a small apical process.

* In the abdomen of the female dissected, there were found 142 fully developed eggs.

In addition to the foregoing, the characters of the genus *Eremopsocus* are :—

Antennae much longer than wings, the flagellum greatly thickened in the proximal portion (first flagellar segment clavate) but becoming slender distally.

In the fore-wings—Pterostigma deep, triangular; radial fork narrow but the branches divergently curved distally; discal cell large; Areola postica (cubital cell) with acuminate apex connected to media above by a short veinlet; veins (non-pubescent) in apical half of wing with broad, pale interruptions.

Otherwise generally agreeing with the characters of the family.

The obvious differences between this and related genera are slight. *Syngonosoma* is described as showing a more abrupt contrast in the antennae between the two enlarged flagellar segments and the remainder, and in its fore-wing venation a more elongate pterostigma, a broader discal cell, and a less symmetrical cubital cell. In *Cerastipsocus* the striking pale interruptions in the veins of the fore-wing do not occur, and the antennae are not proximally swollen to such an abnormal degree,—even when stout the first flagellar segment is not clavate. The Asiatic genus *Dinopsocus*, Banks, 1920, is closely allied; in this only the first flagellar segment is incrassate.

Eremopsocus infumatus, McL., **venezuelensis,** subsp. n.

The specimens examined had been partly decolorised by long immersion in spirit and had suffered damage to the limbs; the antennae were so broken up that in the least defective only the two basal and first two flagellar segments remained connected.

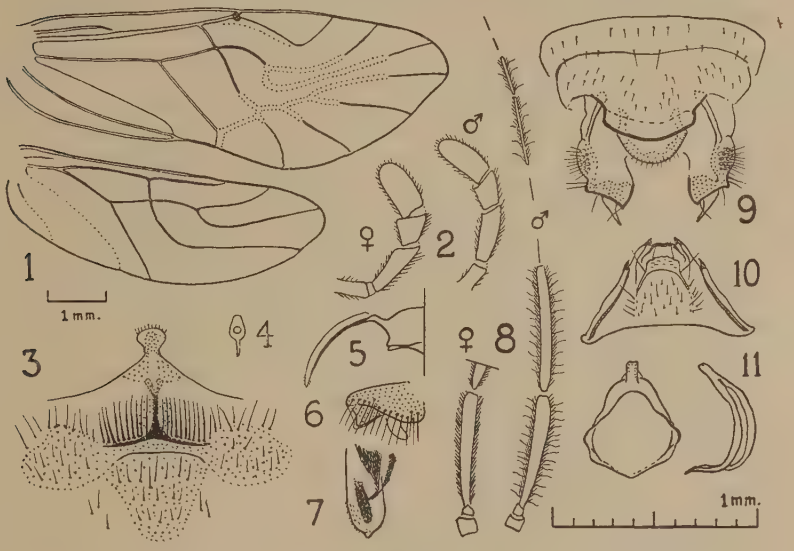
General colour brown. Head probably with lighter and darker markings; clypeus with about thirteen dark striae converging anteriorly. Thoracic lobes narrowly edged paler; antedorsum of mesothorax dark. Femora and tibiae yellowish-brown; coxae, distal ends of tibiae and both tarsal segments dark. Fore-wings deep brown, somewhat smoky, darker in apical half; veins in basal half yellowish-brown, in apical half darker than membrane but with colourless interruptions margined white where indicated in fig. 1; analis narrowly margined white. Hind-wings a little paler than fore-wings; the veins mostly dark, analis and axillaris narrowly margined white. The wings of the female are rather darker than those of the male, with the stigma darker in tint.

Morphological. Large stout species. Eyes relatively small, those of the male not appreciably larger than those of the female, interocular space about five times the apparent eye-diameter. Antennae probably twice as long as wings; first flagellar segment much thickened and clavate, second rather less thickened, remainder relatively slender but strong; flagellar ciliation in ♀ short, dense, bristly and oblique, in the ♂ likewise but with the addition of longer, fine, wavy, perpendicularly outstanding hairs. Mouth-parts much as in the European *Psococerastis gibbosus*, Sulz., but terminal segment of maxillary palpi less broadly rounded. Venation as figured (fig. 1); *r–m* junction in fore-wings either a point or a very short confluence, in hind-wings variable, one showing a fairly long cross-vein. Genitalia as figured; a noticeable feature in the female is the transverse row of long cilia on the subgenital plate (possibly a generic character). Hypandrium of male with two small teeth apically and one at each side, on the disc a rugose flap. Telson of male as figured (fig. 9); last abdominal tergite produced into a plate-like projection overhanging the suranal lobe; telson of female similar in type to that of *P. gibbosus*. Ciliation of head and body fine and moderately long. Fore-wing, ♂, 6 mm.; ♀, 7·5 mm.

Nymphs: The proximal flagellar segments of the antennae are stout but of even thickness, proportionally shorter, and with only fine scattered cilia.

Venezuela: Las Adjuntas; beaten from foliage of a tree (*Solanum* sp.) on coffee plantation (Hac. Caricuao), 3 ♀♀, 1 ♂, July 1926 (*H. E. Box*). Same locality; in cluster on trunk of *Inga vera*, several nymphs, June 1926 (*H. E. Box*).

The specimens and dissections will be deposited in the British Museum.



Figs.—1, 3–7, ♀; 9–11, ♂. Wings and antennae to scale of fig. 1, other figures all to scale under fig. 11.

(1) Wings; (2) Maxillary palpi; (3) Subgenital plate; (4) Gonopore; (5) Anterior gonopod and part of segment viii + ix; (6) Median (lateral) gonopod; (7) Posterior gonopod; (8) Portions of antennae; (9) Terminal segments of abdomen with telson; (10) Hypandrium; (11) Phallic sclerite, dorsal and side aspects.

Whereas the female of *venezuelensis* is the darker, and has antennae as stout as those of the male, the reverse appears to be the case with *infumatus*; indeed the antennae of the female are described by McLachlan as "filiform," "forming a long jointed thread." McLachlan does not mention a cross-veinlet between cubital cell and media.

Syngonosoma flagellicorne, Kolbe (fore-wing *ca.* 5 mm.), may have been described from males; it has the pale tracts of the venation sulphur-yellow. *S. reducta*, Banks, 1920 (fore-wing *ca.* 5 mm., ♂), from Mexico, is without pale gaps in the branches of media.

THE GENUS *STACTOBIA*, McLACH. (TRICHOPTERA)

By Martin E. Mosely, F.R.E.S.

In more than one Order there are problems awaiting solution until such time as the McLachlan collection of Neuroptera, etc., shall be rendered available to entomologists for study.

There are many types in this collection, more particularly of Trichoptera, and though, generally speaking, McLachlan's descriptions and figures are amply sufficient for the recognition of the insect to which he refers, yet here and there, as new species are discovered, we find that occasionally these descriptions do not quite suffice to differentiate the species beyond all possible doubt.

This is the case in respect to the genus *Stactobia*, where the figures and descriptions are insufficiently detailed for absolutely certain recognition.

As a rule, in the Hydroptilidae, a family of minute insects of which the species of *Stactobia* are amongst the smallest, the genitalic characters are well defined and easy to make out. Unfortunately, in this genus, the reverse is the case. The genitalia are heavily shrouded by a dense mat of stout hairs, and even when these have been removed, a matter of no little difficulty, the various parts are so obscure that their origins and the position of the margin of the terminal segment are open to much doubt even under a high magnification. They are even more obscure when mounted in balsam than when free in alcohol or some other preservative. Needless to say, nothing can be seen of them in pinned examples.

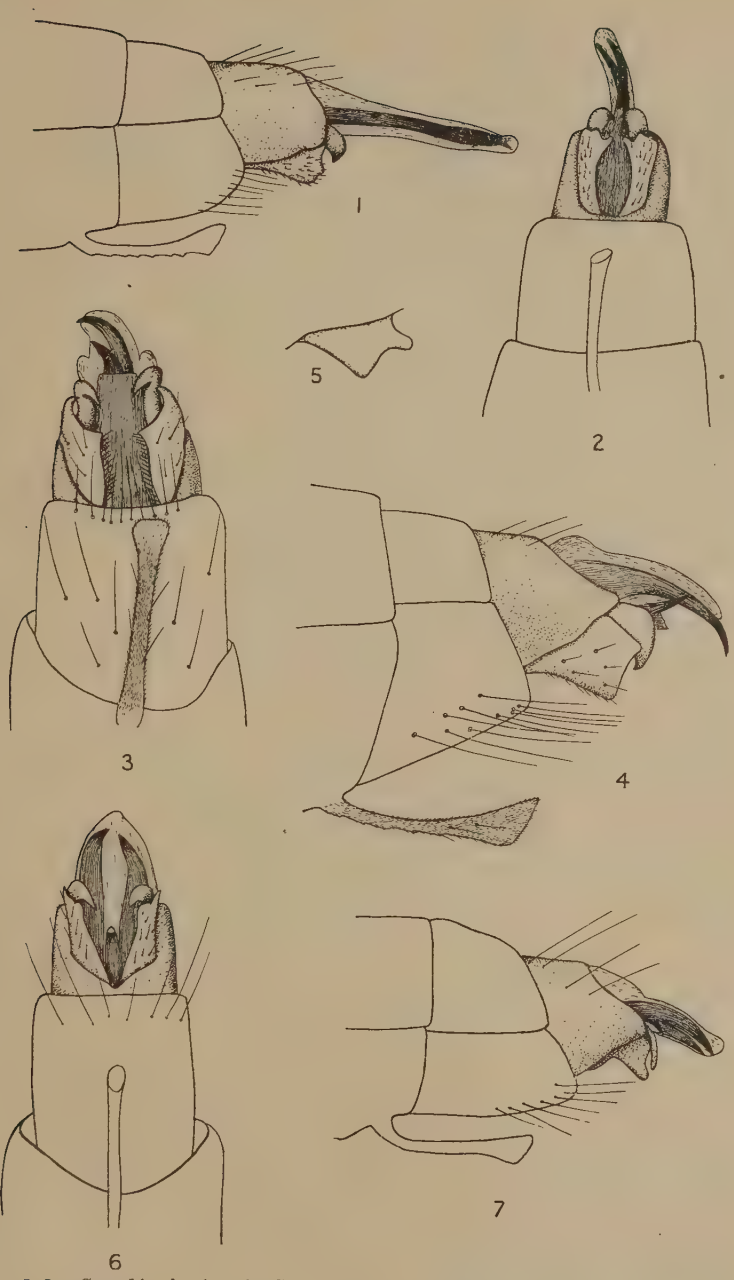
It is certain that the genus contains at least three European species, but the identity of two of them, *fuscicornis*, Schneider, and *eatoniella*, McLach., has never been satisfactorily established.

Schneider described *fuscicornis*, which is the genotype, from examples taken at Messina in Sicily during mid-March, but inquiries, both in Europe and also in America (where Hagen's collection is preserved), have failed to reveal the type. McLachlan recorded it again at Le Lioran in Cantal, at various places in Portugal, North Italy, and at Amalfi near Naples; he considered that examples seen in the Val Levantina, Ticino, Switzerland, but not retained, belonged also to this species. It should be noted, however, that the dates of all McLachlan's records fall between the 7th June and the 27th July as compared with Schneider's records during mid-March. I myself have taken a long series of a *Stactobia* at Le Lioran during July, and this is presumably the same species as that recorded by McLachlan and noted above.

A species taken by me in Corsica and subsequently by Mr. O. Richards at Le Trayas, Var, and described as *furcata*, Mosely, is definitely distinct from the Le Lioran examples in my collection.

Having regard to the close kinship that exists between the Sicilian and the Corsican fauna, it now seems to me far more probable that the Corsican rather than the Le Lioran examples are the true *fuscicornis*, and when the species has been rediscovered in Sicily, I expect to find this suggestion confirmed.

It may be added that Dr. Ulmer kindly sent me an example from Neckarsteinach, Germany, from Thienemann's collection labelled *fuscicornis*, which is similar to my Le Lioran species. There is, however, no definite evidence that Thienemann's determination is correct, and examples from Germany are less likely to be identical with Sicilian material than would be those from Corsica and the French Mediterranean Coast.



FIGS. 1–2.—*Stactobia fuscicornis*, Schneider, ♂; 1, genitalia ventral; 2, lateral (from another specimen).
FIGS. 3–5.—*Stactobia furcata*, Mosely, ♂; 3, genitalia ventral; 4, lateral; 5, inferior appendage, lateral, example from Le Trayas, Var.
FIGS. 6–7.—*Stactobia eatoniella*, McLach., ♂; 6, genitalia ventral; 7, lateral.

Yet a further complication is found in the late Dr. Ris's description of a *Stactobia* from Mendrisio, Switzerland, which he identifies with *fuscicornis*, accompanying his description with an excellent figure. From this it is evident that the insect before him was not the same as the Le Lioran and German examples. On the other hand, it is clearly recognisable as a species which I have taken at Bourg d'Oisans in Isère, France, and have considered tentatively as *eatoniella*, McLach., my view being perhaps influenced by the fact that it was certainly distinct from the Le Lioran species determined by McLachlan as *fuscicornis*; moreover, this author recorded *eatoniella* from near Sixt in Savoy, not so far from Bourg d'Oisans as to rule out the likelihood of the species occurring in this district. But McLachlan also recorded the species in the Pyrenees near Quillan and in Switzerland as well, so that until either the type can be re-examined or fresh material obtained from Quillan, there can be no absolute certainty that the Bourg d'Oisans and the Mendrisio insects are definitely *eatoniella*.

Klapálek adds further to the confusion by describing and figuring a species which he calls *eatoniella* in 1901, *Bull. Int. Acad. Sci. Francis Joseph.* **6,** from Tarvis in Carinthia. I have failed to reconcile his description and figures with any of the three known species, and it may be that a fourth is here involved.

These are the facts. In the absence of an opportunity of examining either the types or examples from the actual type localities, there seems no other course open than to re-describe and figure the species on the assumption that the Le Lioran examples *may be fuscicornis* and those from Bourg d'Oisans, *eatoniella*.

I am not altogether satisfied that the determinations are correct but, with these figures available, it should be possible, in the future, with fresh material from Sicily and the Pyrenees, to clear up the position beyond all reasonable doubt.

The assembly together of three species has led to a better understanding of the genitalia in the genus, and, with more material available of *furcata* from Mr. Richards' collection, I find it advisable to make a further alteration of the figures of this species; those given in *Eos*, Madrid, **8,** are not quite reconcilable with the *Stactobia* formation as shown in the remaining species and the additional examples received have enabled me to sacrifice material in the endeavour better to make out the structure.

A few words may be added to indicate the general construction of the genitalia in the genus, or, at any rate, in the three European species. The terminal segments are deeply excised both dorsally and ventrally; there is a long penis sheathed in a membrane, capable of considerable extension, accompanied by two or more exceptionally strong black spines, the tips of which may sometimes be seen in dried examples. It is necessary, of course, to clear the material in KOH to obtain a correct conception of their form. These spines furnish the most easily recognisable character for the separation of the species. A pair of plates with downwardly directed hooked apices may perhaps be homologous with the superior appendages, and there is also a pair of characteristically formed inferior appendages. A strong process arises from the antipenultimate ventral segment.

Key to the Species.

1. Black spines three in number . . . . . *eatoniella*, McLach.
– Black spines only two in number . . . . . 2.
2. Black spines of equal length, nearly symmetric . . *fuscicornis*, Schneider.
Black spines unequal in length, asymmetric; the one, half the length of the other, the longer directed downwards, the shorter upwards *furcata*, Mosely.

S. fuscicornis (figs. 1–2).	*S. furcata* (figs. 3–5).	*S. eatoniella* (figs. 6–7).
Black spines two in number of approximately the same length and approximately symmetric.	*Black spines* two in number, asymmetric, one much longer than the other, curving downwards, the shorter curving upwards and meeting or overlapping the longer about midway.	*Black spines* three in number, an approximately symmetrical pair curving downward with a third black spine between them towards the base also curving downwards.
Superior appendage from the side represented by a stout hooked process directed downward.	*Superior appendage* somewhat similar to that of *fuscicornis*, but with the hook larger and longer.	*Superior appendage* from the side represented by a fine hooked process directed downward.
Inferior appendages from beneath not very broad, each with a dilated tripointed apex, inner angle more produced than the outer; from the side rhomboidal middle (outer) angle only slightly produced.	*Inferior appendages* from beneath, each very broad, apex excised and obliquely truncate, outer angle much produced to form an incurved hook, inner angle directed inwards; from the side rhomboidal, middle (outer) angle rather produced, lower angle considerably produced. (Examples from Le Trayas, Var, vary somewhat from the typical form as shown in fig. 5.)	*Inferior appendages* from beneath each rather narrow, apex not dilated, apical margin excised, outer angle strongly produced; from the side triangular, broad at the base, apex directed downward, produced and rounded, outer margin slightly excised.

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A NEW GENUS OF CORDULINE DRAGONFLY FROM SOUTH AFRICA (ODONATA)

By K. H. Barnard, D.Sc., F.L.S.

The credit for the first discovery of a Corduline Dragonfly in South Africa belongs to Mr. A. C. Harrison, a well-known Cape Town angler, who caught two males in December 1931. Since then a sharp look-out has been kept for further specimens, and although no more examples of the original species have been seen, several specimens of a second species have been discovered by Mr. H. G. Wood and myself while investigating the fauna of the Cape mountain ranges. This latter species, which is made the type of the new genus because both sexes are known, has been found in three localities, including Table Mountain in the vicinity of Cape Town. This is not so remarkable when it is

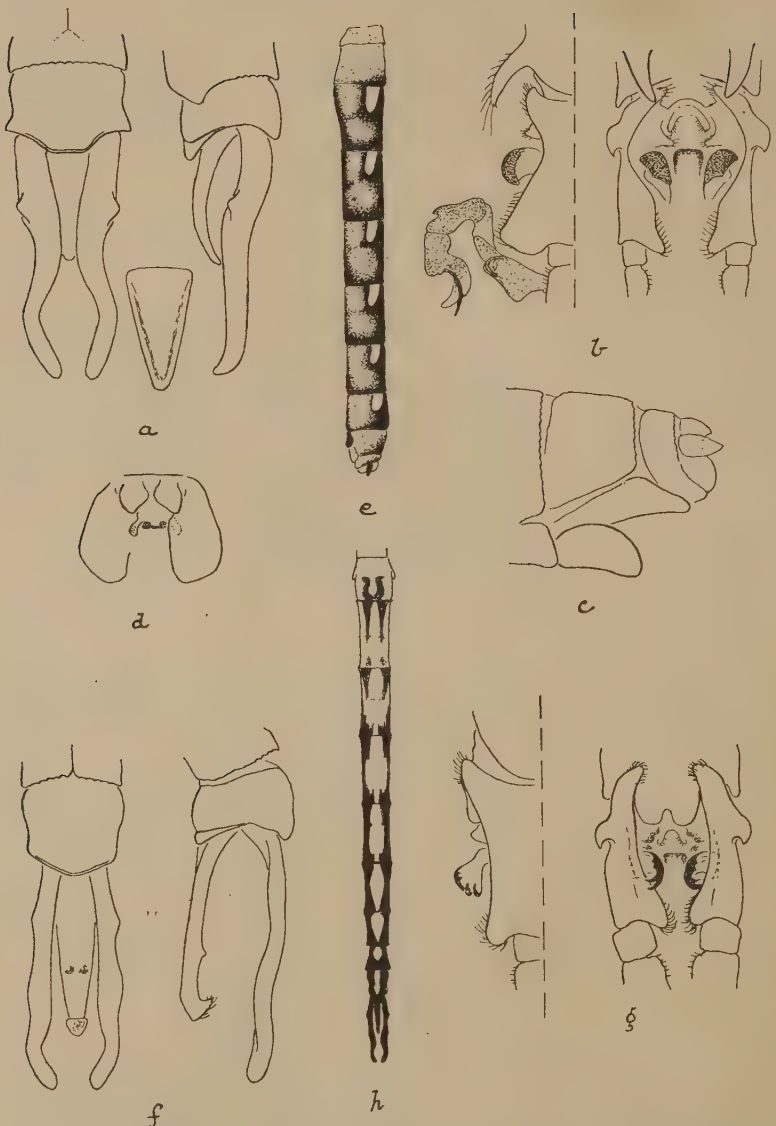


Fig. 1.—*Presba venator*, gen. et sp. n. (*a*) dorsal and lateral views of ♂ appendages, and dorsal view of lower appendage; (*b*) lateral and ventral views of ♂ genitalia, segments 1 and 2, the penis removed in the ventral view; (*c*) lateral view of end of abdomen ♀; (*d*) ventral view of valves and median processes, ♀; (*e*) lateral view of abdomen ♀, the dotted portions red.

Presba piscator, sp. n. (*f*) dorsal and lateral views of ♂ appendages; (*g*) lateral and ventral views of ♂ genitalia, segments 1 and 2, penis removed; (*h*) dorsal view of abdomen ♂.

realised that very little systematic collecting of dragonflies has been done, owing probably to the feeling that such strong-flying insects would be widespread and well known (see the poverty of Cape localities in Ris' Monograph of South African Odonata, 1921, *Ann. S. Afr. Mus.*, **18**).

The genotype, with which I have personal acquaintance, is an extraordinarily handsome insect, and is at once recognisable from all other Cape dragonflies by its bright colours and its sustained flight. It has, however, the habit common to several other allied forms of flying in a definite "beat," and by quietly taking up a strategic position at some spot on this "beat" the collector has little difficulty in effecting a capture.

Oviposition has not been observed, and no nymph which could belong to these dragonflies has yet been found.

The specific names allude to my friends: Mr. H. G. Wood, a great hunter of insects, and Mr. A. C. Harrison, a disciple of Isaak Walton.

Presba, gen. n.

Close to *Syncordulia*. Tibial keel on all legs, occupying slightly more than the distal half in fore and mid legs, and in hind leg the distal $\frac{4}{5}$. Abdomen narrow, compressed, dorsally keeled. Auricles not serrulate. Median space and triangles not crossed. Triangle of hind-wing slightly distal to arculus. Sectors of arculus separate from their origin in both wings. Anal loop of 2 cells' width, without widened "toe." In fore-wing M_4 and Cu_1 parallel or very slightly divergent distal to level of nodus. Post-trigonal cells in one row in fore-wing, in one or two rows in hind-wing. Thorax very furry.

Genotype: *P. venator*, sp. n.

Presba venator, sp. n. (Fig. 1 *a–e.*)

♂♀. Labrum, clypeus and frons fulvous-castaneous; vertex dark metallic blue at sides, centre castaneous; occipital triangle castaneous. Thorax castaneous with a narrow mediodorsal pale ochreous stripe, flanked on either side by a metallic peacock-blue stripe, the two oblique lateral stripes similarly metallic peacock-blue. Legs black, coxae and trochanters fulvous-castaneous. Abdomen segments 1 and 2 castaneous, segment 2 with black band on hind margin dorsally; segments 3–9 Venetian-red with more or less complete black bands, and a submedian cuneiform pale cream-coloured mark anteriorly; segment 10 ochreous with black hind margin. In ♂ upper appendages black, lower appendage ochreous, with the tip, and sometimes also the margins, black. In ♀ valves and anal appendages black. Wings hyaline, faintly suffused towards apices in ♂, in ♀ strongly suffused with yellow from base to pterostigma. Pterostigma and costa black. Membranule greyish-white.

Abdominal segments 6–9 strongly hairy in both sexes. Dorsal keel ceasing about middle of segment 9. Post-trigonal cells in hind-wing in 2 rows, except for the proximal 2 cells in ♂. In fore-wing M_4 and Cu_1 parallel throughout.

Genitalia, ♂, segment 1 with a pair of strong spiniform processes on the sternite, projecting backwards; anterior lamina (segment 2) broad, shallowly excised; hamuli minutely serrulate on the margin curved outwards; genital lobes strong; penis apically with a single spiniform, strongly chitinised, rod. ♀, valves prominent, lobate, median processes very small, knob-like, hidden under the valves.

Fore- and hind-wing: ♂, 31–33 mm.; ♀, 33–34 mm. Abdomen: ♂, 37–39 mm. (including appendages); ♀, 35–36 mm.

Localities. Cape Province: French Hoek Mts. (*K.H.B.* and *H.G.W.*, Dec. 1932, ♂♂♀♀); Hottentots Holland Mts. (*K.H.B.* and *H.G.W.*, Jan. 1933, ♂♂♀♀); Table Mt. (*K.H.B.* and *H.G.W.*, Jan. 1933, ♂♂♀♀).

Presba piscator, sp. n. (Figs. 1 *f–h*, 2.)

♂. Labrum orange-yellow; clypeus and frons lemon-yellow; vertex dark metallic blue; occipital triangle ochreous; hind margin of eyes black. Thorax raw-sienna, mediodorsal and two lateral oblique stripes pale yellow, all three stripes bordered with black, which in some lights shows a slight metallic blue sheen. Legs black, posterior surface of fore and mid femora fulvous, coxae and trochanters fulvous. Abdomen segments 1 and 2

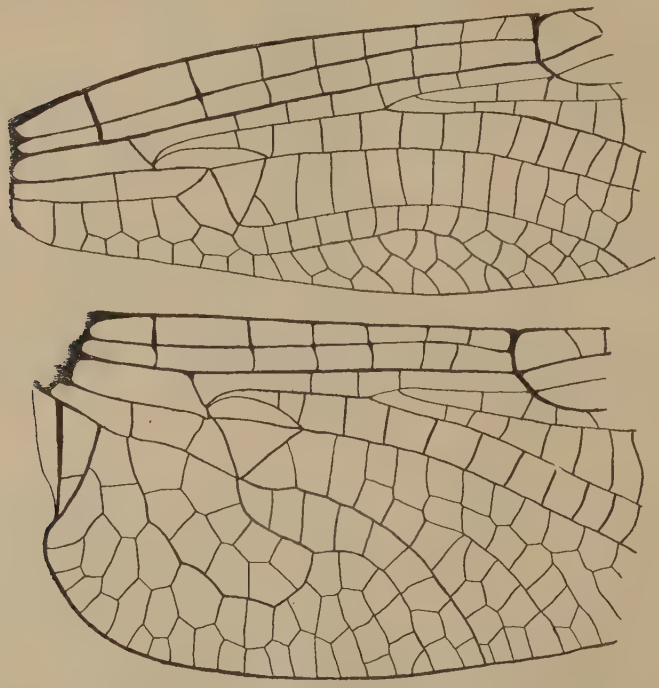


Fig. 2.—*Presba piscator*, sp. n. Basal halves of fore- and hind-wings ♂.

mostly ferruginous, 2 with 2 black stripes dorsally in posterior half, segments 3–10 black ventrally and laterally, yellow dorsally with more or less complete bands of black at junctions of segments (fig. 1*h*). Appendages black. Wings hyaline, slightly suffused with yellow in costal area between nodus and pterostigma, the latter black. Front margin of costa pale ochreous. Membranule whitish.

Abdomen glabrous. Dorsal keel extending to end of segment 9. Post-trigonal cells in hind-wing in one row (3–4 cells). In fore-wing M_4 and Cu_1 slightly divergent distally.

Genitalia, segment 1 unarmed; anterior lamina lobate, apically cleft; hamuli with 4 outwardly curved hooks, the posterior two larger than the other two; genital lobes moderate; penis apically with 2 strongly chitinised spiniform rods.

Fore- and hind-wing: 29 mm. Abdomen: 37 mm. (incl. appendages).

Locality. Cape Province: Berg River at Groot Drakenstein (*A. C. Harrison*, December 1931, 2 ♂♂).

NOTES ON THEOBALD'S "THE PLANTLICE OR APHIDIDAE OF GREAT BRITAIN" *

By D. Hille Ris Lambers.

(*From the Entomological Laboratory, Wageningen, Holland.*)

Introduction. In February 1933, through the kindness of the Trustees of the British Museum (Natural History), I had the opportunity of going through part of the Theobald collection of Aphids, and of examining some of his types, the results of which are given in the following paper.

There is no doubt that the study of the Aphids is still in a rather primitive stage and that a genus is a more or less vague conception to most workers, not so much in the generic diagnosis, as in the arrangement of border-line species. Theobald accepted Baker's system, at least in name, but judging by the way in which his species are distributed over the genera, he followed a very indefinite rule in the estimation of generic characters.

Nobody will doubt that the summer and winter forms of a migrating Aphid belong to one species. Every author has made the mistake of describing them as distinct species when the life-cycle was unknown. This is more or less to be expected, as the morphological characters of an Aphid on primary and secondary hosts may be rather different. But Theobald placed them in different genera, even though he knew the biology. As an example illustrating this point, I give the following: *Rhopalosiphum nymphaeae*, L. (Theo. **2**: 60–65), is the summer form of *Aphis infuscata*, Koch (Theo., **2**: 204–206), and is described also under the name *Hyadaphis sparganii*, Theo. (**2**: 55 56). Again, *Anuraphis roseus*, Baker (Theo. **2**: 294–301), is described also as *Myzus plantagineus*, Pass. (Theo. **3**: 337). The latter migrates from apple to plantain.

The same species is often described many times under various names (*Macrosiphum solanifolii*, Ashm., is described as *M. gei*, Koch, *M. amygdaloides*, Theo., *M. sileneum*, Theo., *M. centranthi*, Theo. partim., *M. euphorbiellum*, Theo., and *M. hellebori*, Theo. & Walton; the same is the case with *Aulacorthum solani*, Kalt., see below).

The keys are almost useless as in some instances the characters and differences do not agree with his own material, *e.g.* in the key to *Macrosiphum corallium* (**1**: 65) is characterised by having "5 hairs each side" on the cauda, whereas the cauda of his type specimen has at least 17 hairs.

In the following paper, an attempt is made to correct some of the errors in Vol. 1. It is quite possible that new mistakes have been made in doing so, but science progresses by "trial and error." I have not yet completely examined the material in Vols. 2 and 3, but I hope to publish later the notes that I have made on some of the types. The systematics of Börner are followed for practical reasons, although I cannot agree in every detail with his ideas or with the characters given for some of his genera.

1. *Macrosiphum allii*, Jackson, Theo. **1**: 75–76 (*alii*).
   The Jackson slide in Theobald's collection is only *Macrosiphum* (*Sitobion*) *avenae*, Fabr., so that I place Jackson's species as a synonym.
2. *Macrosiphum cyparissiae*, Buckton, Theo. **1**: 81–82.
   As Theobald says, Buckton's slide in the B.M. collection is *rubifolium*, Theo.

* Theobald, F. V. *The Plantlice or Aphididae of Great Britain*, 8vo. London, &c., **1**, 1926; **2**, 1927; **3**, 1929.

3. *Macrosiphum olivatum*, Buckton, Theo. **2** : 82–83.
   I described this species as *Dactynotus marcatus*, H.R.L., nom.n. for *Aphis serratulae*, Kalt., *nec.* Schrk., but after examination of Buckton's types, decide to place *marcatus*, H.R.L., as a synonym of Buckton's species. It comes in *Dactynotus*, Raf.
4. *Macrosiphum sonchi*, L., Theo. **1** : 86–88.
   Though Theobald's description is correct, a number of the food-plants are wrong and were probably copied from other authors, viz. : *Centaurea nigra*, *Serratula arvensis*, *Lapsana communis* and *Carduus* sp. Correct food-plants are : *Sonchus* spp., *Chrysanthemum segetum* and *Lactuca* sp.
5. *Macrosiphum fragariae*, Wlk., Theo. **1** : 89–91.
   There is evidently some confusion about this species. Walker, Koch, Buckton and Theobald have described a *fragariae*. Walker's is either *rubiellum*, Theo., or *avenae*, Fabr., according to a slide in the B.M. collection. Koch's is *Macrosiphum rosae*, which rarely occurs on strawberries. Buckton's slide is *Macrosiphum solanifolii*, Ashm., quite common on strawberries, and Theobald's slides are all *rosae*, L., none collected on *Fragaria*, but all on *Centranthus*, Wye, 1914. His figures are *M. rosae*, as might be expected.
6. *Macrosiphum jaceae*, L., Theo. **1** : 94–97.
   Like every other author, Theobald treats the two forms from *Centaurea* spp. and from thistles together. The species comes in *Dactynotus*, Raf.
7. *Macrosiphum solidaginis*, Fabr., Theo. **1** : 98–100.
   Of the food-plants only *Solidago virgaurea* is right.

7A. *Macrosiphum amygdaloides*, Theo. **1** : 100–10.
   Apparently *M. solanifolii*, Ashm., and identical with a slide from *Euphorbia marginata* labelled " *M. euphorbianum*, Thos.," sent me from U.S.A.

8. *Macrosiphum hellebori*, Theo. & Walton, **1** : 101–102.
   = *M. solanifolii*, Ashm.
9. *Macrosiphum sileneum*, Theo. **1** : 102–103.
   As I have pointed out earlier, this is *M. solanifolii*, Ashm.
10. *Macrosiphum centranthi*, Theo. **1** : 104–106.
   = *M. solanifolii*, Ashm., mixed with *M. rosae*, L. In his figures those of the alatae are of *M. rosae*, L., those of the apterae of *M. solanifolii*, Ashm.
11. *Macrosiphum phillipsii*, Theo. **1** : 106–107.
   = *Dactynotus cirsii*, L. (= *picridis*, Fabr.). The record from New Ross is strange. One slide labelled " *M. phillipsi*, n.sp., New Ross," contains an *Aphis*, in very bad condition, the other, labelled " Ireland " is apparently the type of his description. I designate the latter slide as holotype, so that it becomes a synonym of *D. cirsii*, L.
12. *Macrosiphum corallinum*, Theo. **1** : 107–108.
   According to Mordvilko, *M. cholodkovskyi*, Mordv., migrates from *Ulmaria* to Umbelliferae. Now Theobald's *corallinum* is certainly identical with *M. cholodkovskyi*, Mordv., but I consider the latter to be identical with true *M. gei*, Koch. Theobald's type has many more caudal hairs than shown in his figure 62.
13. *Macrosiphum gei*, Koch, Theo. **1** : 108–114.
   In this species Theobald has made the very common mistake of mixing up two closely allied species. Hitherto only Mordvilko has known how to separate them. The most striking difference is in the number of caudal

hairs: at least 17 in *M. gei*, Koch (on *Geum* spp., *Ulmaria palustris*, various Umbelliferæ), at most 14 in *M. solanifolii*, Ashm., which is nearly omniphagous. Both are present in his material.

14. *Macrosiphum galiophagum*, Wimshurst, Theo. **1**: 117–118.
This species is identical with or closely allied to *M. rubiellum*, Theo., according to the material in the Theobald collection.

15. *Macrosiphum formicarium*, Theo. **1**: 118–119.
This comes in *Macrosiphoniella*, Del Guercio. A synonym of this species is my *M. pseudolineata*, H.R.L., described from *Tanacetum vulgare*. The species must have fallen into the ants' nest when Mr. Donisthorpe caught it, as it is not myrmecophilous.

16. *Macrosiphum urticae*, Schrk., Theo. **1**: 119–123.
Should be named *Acyrthosiphon carnosum*, Buckt., as *Aphis urticae*, Schrk., is preoccupied by *A. urticae*, L. (*i.e.* the Coccid, *Orthezia urticae*, L.).

17. *Macrosiphum euphorbiellum*, Theo. **1**: 123–124.
= *Macrosiphum solanifolii*, Ashm.

18. *Macrosiphum pelargonii*, Kalt., Theo. **1**: 124–126.
Theobald has confused *pelargonii*, Kalt., and *solani*, Kalt. His records on *Chrysanthemum*, *Cineraria* and *Arum* belong to the latter.

19. *Macrosiphum kaltenbachii*, Schout., Theo. **1**: 126–127.
The alate is *Nasonovia ribicola*, Kalt. (*hieracii*, Kalt.). I failed somehow to examine the apterae which seem to be another species.

20. *Macrosiphum pisi*, Kalt., Theo. **1**: 127—133.
Should be *Acyrthosiphon onobrychidis*, B.d.F. (1841). Kaltenbach's description is dated 1843.

21. *Macrosiphum dirhodum*, Wlk. Theo. **1**: 135–138.
Should come in the genus *Metopolophium*, Mordv., which is characterised by the presence of two tubercles on the vertex in the alatae.

22. *Macrosiphum theobaldii*, Davis., Theo. **1**: 139.
= *Acyrthosiphon onobrychidis*, B.d.F. (*pisi*, Kalt.).

23. *Macrosiphum rogersii*, Theo. **1**: 139–141.
Two slides in the Theobald collection contain immature apterae only. The specimen from which the drawing is made was not found in the collection. He places *fragariae*, Buckton, as a synonym which is incorrect, as this is *M. solanifolii*, Ashm., and has a distinct reticulate area at the apex of the siphunculi. Theobald's *rogersii* is not a *Macrosiphum*, if his figure of the siphunculus is correct. It comes in *Acyrthosiphon* or *Aulacorthum*.

24. *Macrosiphum tussilaginis*, Wlk., Theo. **1**: 141–142.
Comes in *Dactynotus*, Raf.

25. *Macrosiphum tanaceticolum*, Kalt., Theo. **1**: 143–144.
Comes in *Dactynotus*, Raf.

26. *Illinoia*, Wilson, Theo. **1**: 145–146.
The type of this genus is a *Macrosiphum*, as it has reticulations at the apex of the siphunculi, as well as all the other characters.

27. *Macrosiphoniella lilacina*, Ferr., Theo. **1**: 155—156.
If one looks at Theobald's figure of the siphunculus, it would not appear to be a *Macrosiphoniella* at all. Examination of his slide, however, shows the distal half of the siphunculi to be reticulated. *M. lilacina* is only the red variety of *M. tanacetaria*, Kalt., which is quite common in the autumn, and has the same colour as the oviparae. Both Ferrari and Theobald mistook it for a new species.

28. *Macrosiphoniella campanulae*, Kalt., Theo. **1** : 156–159.
Is a *Dactynotus*, Raf., though it is abnormal in that it usually has three hairs on the first tarsal joints, whereas the other species always have five.
29. *Macrosiphoniella limonii*, Wlk., Theo. **1** : 165–166.
Comes in *Staticobium*, Mordv., not in *Macrosiphoniella*, from which it differs in the structure of the rostrum and cauda.
30. *Macrosiphoniella balsamines*, Kalt., Theo. **1** : 168–169.
Is the type of *Impatientinum*, Mordv., which differs from *Macrosiphoniella* in having the whole tergite sclerotic and the character of the ultimate rostral segment.
31. *Macrosiphoniella lutea*, Buckt., Theo. **1** : 169–171.
Does not belong in this genus, but I am not yet quite certain where its proper place is, owing to lack of material for examination.
32. *Macrosiphoniella pulvera*, Wlk., Theo. **1** : 171–172.
Contrary to Theobald's opinion, I find differences between *M. pulvera*, Walk., on *Artemisia maritima* and *M. abrotani*, Wlk., on *A. abrotanum*, and consider them quite distinct. I hope to settle this point more definitely later.
33. *Amphorophora brittenii*, Theo. **1** : 180–183.
As I pointed out earlier,* this is only *A. rhinanthi*, Schouteden.
34. *Amphorophora hieraceoides*, Theo. **1** : 185–186.
= *Amphorophora picridis*, Börner.
35. *Amphorophora evansii*, Theo. **1** : 193–195.
= *Acyrthosiphon carnosum*, Buckt. (*urticae*, Schrk.).
36. *Amphorophora fragariella*, Theo. **1** : 195–196.
= *Amphorophora* (*Eunectarosiphon*) *rubi*, Kalt., as Mason † and Mordvilko ‡ have rightly pointed out.
37. *Amphorophora hibernaculorum*, B.d.F., Theo. **1** : 197–198.
I am not quite sure whether this is a good species, but at all events it belongs in *Macrosiphum*, quite near *solanifolii*, Ashm., with which it may be identical.
38. *Amphorophora cosmopolitanus*, Mason, Theo. **1** : 199–204.
Two records relate to other species : *A. lapsanae*, Börner, on *Lapsana communis*, and *A. picridis*, Börner, on *Picris hieracioides*.
39. *Amphorophora lonicerae*, Siebold, Theo. **1** : 204–206.
This species migrates to *Glyceria* and *Phalaris*, not to *Lapsana* as Theobald thought. The *Lapsana* Aphid, with which he confused it, is *A. lapsåhae*, Börner.
40. *Amphorophora aconiti*, van der Goot, Theo. **1** : 206–208.
Comes in *Delphiniobium*, Mordv., a subgenus of *Macrosiphum*.
41. *Amphorophora triticum*, Theo. **1** : 208–209.
This is an aptera of *A. lactucae*, L. (*cosmopolitanus*, Mason), and not of *A. lonicerae*, Sieb., as Börner § thought.
42. *Rhopalosiphoninus waltoni* Theo. & Walton, Theo. **1** : 218–219.
This species is very interesting. There are two slides labelled " type " : one of apterae and one of alatae. They represent different species and belong to different genera, even if one follows Theobald's own taxonomy. The apterae are *Rhopalosiphoninus tulipaella*, Theo., and this slide I

* Hille Ris Lambers. 1931, *Tijdsch. Ent.*, **74** : 176–178.
† Mason, P. W. 1925, *Proc. U.S. Nat. Mus.*, **67** : 53.
‡ Mordvilko, A. K. 1919, *Faun. Russ. Aphid.*, p. 263.
§ Börner, in 1932, *Sorauer, Handb. Pflanzenkrankh.*, **4** : 617.

designate as type. The alatae are those of *A. lactucae*, L. (*cosmopolitanus*, Mason) ! ! This explains why the alatae have such an unusual amount of rhinaria and the apterae normally none.

43. *Rhopalosiphoninus pseudorumicis*, Theo. **1** : 219–220.
= *R. tulipaella*, Theo.

44. *Rhopalosiphoninus lupulinus*, Theo. **1** : 223–224.
= *R. tulipaella*, Theo.

45. *Hyalopteroides pallida*, Theo. **1** : 224–225.
= *H. dactylidis*, Hayhurst.

46. *Capitophorus ribis*, L. Theo. **1** : 229–233.
Is the genotype of *Cryptomyzus*, Oestl. The food-plants are copied from other publications, absolutely wrongly so far as *Polygonum* spp. are concerned.

47. *Capitophorus quaerens*, Wlk., Theo. **1** : 234.
I found a slide in the B.M. collection with the label bearing the name *Galeopsis ladanum* in Walker's handwriting. This is probably his *quaerens*, and a synonym of *Cryptomyzus galeopsidis*, Kalt.

48. *Capitophorus whitei*, Theo. **1** : 234–235.
This is *Cryptomyzus galeopsidis*, Kalt., from black-currant and gooseberry.

49. *Capitophorus gillettei*, Theo. **1** : 238–241.
Is only *C. hippophaes*, Walker.

50. *Capitophorus tetrarhodus*, Wlk., Theo. **1** : 241–242.
Is not a true *Capitophorus*, but comes in *Pentatrichopus*, Börner, of which it is the type.

51. *Capitophorus fragariae*, Theo. **1** : 244–246.
This would be a synonym of *fragaefolii*, Cockll., but as the species lives on *Potentilla* also and has been described from *P. anserina* by Walker as *Aphis potentillae*, it should be named *Pentatrichopus potentillae*, Wlk., as it comes in the same genus as *tetrarhodus*, Wlk.

52. *Capitophorus pilosus*, v.d. Goot. Theo. **1** : 246–248.
Should be named *Pleiotrichophorus glandulosus*, Kalt., as v.d.Goot correctly stated in his 1915 Monograph.

53. *Capitophorus neorosarum*, Theo. **1** : 248–250.
A synonym of *Pentatrichopus tetrarhodus*, Wlk., as Theobald suspected.

54. *Capitophorus avellanae*, Schrk., Theo. **1** : 252–253.
Comes in *Corylobion*, Mordv.

55. *Capitophorus lamii*, v. d. Goot, Theo. **1** : 253–255.
This is not *lamii*, v. d. Goot, as Theobald thought, which is the summer form of *C. ribis* as v. d. Goot himself discovered and recorded in his 1915 Monograph. Theobald's *C. lamii* is the summer form of his *C. whitei*, i.e. *C. galeopsidis*, Kalt.

56. *Capitophorus carthusianus*, Haviland, Theo. **1** : 256.
= *C. flaveolus*, Wlk., so far as the very primitive diagnosis by Miss Haviland allows one to decide.

57. *Capitophorus rosarum*, Kalt., Theo. **1** : 257–259.
Should be *Myzaphis rosarum*, Kalt. ; it is not allied to *Capitophorus*.

58. *Jacksonia*, Theo. **1** : 261–262.
The type and single species *J. papillata*, Theo., is known in the apterous form only. After examination of it, I can see no reason to erect a new genus for this species and place it under *Myzus* (or *Phorodon*, Pass., in the sense of Börner), as it has 2 hairs on the first segment of hind tarsi.

The figures of the siphunculi by Theobald are very misleading, as the real structure is quite different.

59. *Myzus galiifolium*, Theo. **1** : 299–301.
This species looks remarkably like *M. cerasi*, F., on cherry, and at all events is closely allied to this species, although it seems not to be identical.

60. *Myzus molluginellus*, Theo. **1** : 302.
Comes near *rubiellum*, Theo., *rubifolium*, Theo., and *galiifolium*, Theo. Probably this is a migrant of *rubiellum*, Theo., which according to Theobald himself migrates to *Galium*. At all events it comes in *Macrosiphum*, Pass.

61. *Myzus lactucae*, Schrk., Theo. **1** : 302–306.
Is *ribicola*, Kalt., and comes in *Nasonovia*, Mordv. *Aphis lactucae*, Schrk., is preoccupied by *A. lactucae*, L.

62. *Myzus laricellus*, Theo. **1** : 306–307.
A *Macrosiphum*, Pass., most probably a migrant of *M. rubiellum*, Theo.

63. *Myzus hieracii*, Kalt., Theo. **1** : 307–309.
Is the summer form of *Nasonovia ribicola*, Kalt.

64. *Myzus aquilegiae*, Theo. **1** : 310–311.
= *Aulacorthum solani*, Kalt., quite common on *Aquilegia* all over Europe.

65. *Myzus vaccinii*, Theo. **1** : 328–329.
This seems to be a good species, but its generic location is not yet quite certain.

66. *Myzus duffieldii*, Theo. **1** : 311–313.
= *Aulacorthum solani*, Kalt.*

67. *Myzus pseudosolani*, Theo. **1**: 313–315.
= *Aulacorthum solani*, Kalt., as Theobald pointed out himself (**3** : 338).

68. *Myzus piceaellus*, Theo. **1** : 315–316.
= *Aulacorthum solani*, Kalt.

69. *Myzus polygoni*, Buckton, Theo. **1** : 329–330.
I have examined Buckton's slide and find this to be *Nasonovia ribicola*, Kalt. (*hieracii*, Kalt.). Rhinaria on 3rd segment, 37 and 45, on 4th, 4 and 7.

70. *Myzus glaucii*, Theo. **1** : 330–331.
= *Aulacorthum solani*, Kalt. The last sentence of the description is remarkable. " The pigmented patch each side of the lateral stemmata in mounted specimens is characteristic." This " pigmented patch " is the pigment of the ocellus which is often dislocated in preparations.

71. *Myzus circumflexus*, Buckton, Theo. **1** : 331–334.
I place this species in *Aulacorthum*, Mordv.

* There is some doubt among specialists about the identification of *A. solani*, Kalt. Some are of opinion, that *Macrosiphum solanifolii*, Ashm., is meant, others identify it with *Aulacorthum pseudosolani*, Theo. Kaltenbach's description (1843, pp. 15–16) gives the following . . . " Stirnknöpfe gelbgrünlich, letztere nach vorn in einem spitzen Höcker vorgezogen. Oberkörper grün und gelblich melirt, schwach glänzend, runzelig, lederartig. Schwänzchen gelb, aufgebogen, stumpf, kaum 1/3 der Röhren länge." None of these characters is applicable to *M. solanifolii*, Ashm., and all agree very well with those of *A. pseudosolani*, Theo.

To identify it with *M. solanifolii*, Ashm., because Kaltenbach placed it between *A. urticae*, Schrk., and *A. cerealis*, Kalt., has no sense in this case, as he says (p. 16): " Dieses Tier weicht in der Gestallt des Körpers etwas von den übrigen dieser Gruppe ab; die lange Röhren und die Kopfbildung weisen sie jedoch hieher." (Usually there is indeed a sequence in accordance to relationship in his monograph.) The given form of body: " eiförmig " and the length of body also confirm my opinion.

72. *Myzus hydrocotylei*, Theo. **1** : 334–335.
= *Aulacorthum solani*, Kalt.

73. *Myzus festucae*, Theob., **1** : 335–336.
This species is a *Metopolophium*, Mordv. (see No. 21), and I think identical with *M. dirhodum*, Wlk.

74. *Myzus convolvuli*, Kalt., Theo. **1** : 336–338.
= *Aulacorthum solani*, Kalt.

75. *Myzus primulae*, Theo. **1** : 338–341.
Seems to be *Aulacorthum pelargonii*, Kalt. One slide from *Geranium sanguineum*, labelled *Myzus primulae*, Theo., certainly is *pelargonii*, Kalt.

76. *Myzus polyanthi*, Theo. **1** : 341.
= *Aulacorthum solani*, Kalt.

77. "*Myzus impactus*, Walker," Theo. **1** : 342–343.
There are two slides under this name in the Theobald collection. One with apterae and alatae of *Aulacorthum solani*, Kalt., one with an aptera of *Myzus persicae*, Sulzer.

78. *Myzus pseudolamii*, Theo. **1** : 345–346.
Probably this is a good species, which is not very rare throughout Europe. A number of slides from various localities and plants are all labelled "type." It comes in *Acyrthosiphon*, Mordv., in the subgenus *Microlophium*, Mordv., to which *A. carnosa*, Buckt. (*urticae*, Schrk.), also belongs.

79. *Myzus chelidonii*, Kalt. (*nec* Buckt.), Theo. **1** : 346–347.
All slides (from *Lapsana*, *Doronicum* and *Chelidonium*) contain *Aulacorthum solani*, Kalt., those from *Doronicum* are fundatrices of this species.

80. *Myzus veronicellus*, Theo. **1** : 347–349.
No slide under this name is present in Theobald's collection, but there are two under the name *Myzus veronicae*. These contain one alate *Aulacorthum solani*, Kalt., and apterae of *Nasonovia ribicola*, Kalt. (*hieracii*, Kalt.). His descriptions and figures of the apterae seem to be of something different, probably of *solani*, Kalt.

81. *Myzus neogei*, Theo. **1** : 349–350.
This species stands under the name *gei* in his monograph, but the index, his slides and the list on pp. 285 and 286 record it as *neogei*, which seems to be the name he intended to use. It is *Aulacorthum solani*, Kalt.

82. *Myzus mercurialis*, Theo. **1** : 350–351.
= *Aulacorthum solani*, Kalt.

83. *Myzus eupatorii*, Pass. Theo. **1**: 351–352.
So far as I can decide at present, this species is either identical with or closely allied to *Myzus* (or *Phorodon*) *inulae*, Pass. I have not yet compared it with authentic material.

84. *Myzus myrmecophilus*, Theo. **1** : 352–354.
= *Metopolophium dirhodum*, Wlk. (Regarding the myrmecophily, see No. 15.)

85. *Myzus erigeroniella*, Theo. **1** : 354.
I cannot say to what genus this belongs. It certainly is not a *Myzus*, Pass. *sens. strict.*, nor an *Aulacorthum*, Mordv.

86. *Myzus longipennis*, Buckt., Theo. **1** : 354–356.
Theobald's material contains a few larvae only, which seem to be those of *Metopolophium dirhodum*, Walker. At all events his figure 190 is of that species. I have not examined Buckton's type.

87. *Macrosiphum sejunctum*, Wlk., Theo. **1** : 363–364.
This species comes in *Macrosiphoniella*, Del Guercio. I found the species and traced its biology in 1932. It lives on the basal parts of *Achillea* and hibernates there. The colour description by Walker is very accurate.

88. *Myzus conterminus*, Wlk., Theo. **1** : 365–367.
This species, the ovipara of which are described, seems to be a synonym of *nasturtii*, Kalt. It comes in the genus *Lipaphis* and is quite common on various Crucifers throughout Europe.

NEW ELATERIDAE (COL.) FROM MELANESIA

By R. H. Van Zwaluwenburg.

(*Hawaiian Sugar Planters' Association.*)

The nine new species of the Coleopterous family Elateridae here described from the Fiji Islands and the British Solomons, are, for the most part, contained in a collection submitted by Sir Guy A. K. Marshall on behalf of the Imperial Institute of Entomology. Unless otherwise stated, the types are in the British Museum.

Tetrigus, Candèze.

1857. Monog. Elat., **1** : 254.

(Type *Tetrigus parallelus*, Candèze.)

Tetrigus fleutiauxi, sp. n.

Female, 12 mm. long; 3 mm. wide.

Light chestnut, more or less shiny; mouth-parts blackish and prosternum reddish-brown. Covered with a fairly coarse, recumbent, whitish pubescence so disposed on the posterior two-thirds of the elytra as to form small, irregular spots.

Front finely and rather sparsely punctulate; shallowly concave; anterior margin truncate, faintly sinuate in the middle. Antennae (fig. 1) not quite attaining the hind margin

Fig. 1.—*Tetrigus fleutiauxi*, sp. n.; left antenna of ♀, lateral view.

of the prothorax; joints 4–10 serrate, the serrations so produced on the first few segments as to be almost sublamellate but becoming progressively weaker as the distal joints are approached; eleventh joint elongate-oval, entire. Last joint of maxillary palpi robustly securiform.

Pronotum strongly convex in cross section, flattened on the disc; finely and closely punctulate; longer than wide; sides parallel to anterior third, thence rounded to anterior

margin. Posterior angles flaring slightly from the general outline, but parallel; strongly convex but a true carina vague if present. A well-defined, fine, shiny longitudinal groove on the disc almost attains the anterior and posterior margins. Prosternal epipleurae strongly tranversely concave, the lateral margins sharply defined and overhanging. Prosternum with a false transverse suture behind the anterior lobe; the lobe rounded in the middle, with a blunt spine on either side. Mucro horizontal. Mesosternal cavity (fig. 2) with its margins posteriorly subhorizontal and prominent, anteriorly sharply declivous. Scutellum elongate, rounded posteriorly, sharply declivous.

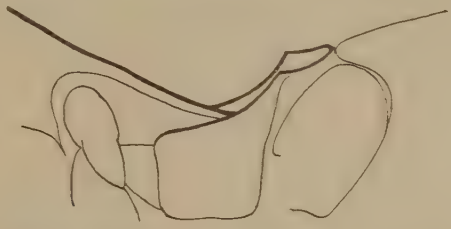


FIG. 2.—*Tetrigus fleutiauxi*, sp. n.; mesosternal cavity and mucro.

Elytra slightly narrower than prothorax, parallel for nearly two-thirds their length, thence narrowed to the apex; obliquely divergent from the sutural margin near the apex, terminating in a short fine mucro. Striae consisting of fine, lightly-impressed punctures; intervals moderately convex, more strongly so basally, their punctulation rather coarse.

Posterior coxal plates slightly wider externally than near middle, widening rather abruptly on the inner third. Tarsi simple.

Described from a single, probably immature, female, Ongea-ndriti, Lau Archipelago, FIJI, vii.28.24 (*E. H. Bryan*). The specimen was taken with four larvae and three pupae of presumably the same species, under the bark of a fallen tree, on the island's high eastern end, a raised coral limestone attaining an elevation of 300 feet.

The type is in the Bernice P. Bishop Museum, Honolulu, Hawaii.

The species is dedicated to Dr. Edmond Fleutiaux of Nogent-sur-Marne, France, who has seen the specimen and kindly assigned it to genus. His helpfulness in this and numerous other instances is gratefully acknowledged.

Dioxypterus, Fairmaire.

1881. Naturaliste, **3**: 406.
1881. Ann. Soc. ent. Fr., (6), **1**: 267.

(Type *Dioxypterus nigrotransversus*, Fairmaire.)

This highly characteristic Melanesian genus is known from New Guinea, the Bismarck Archipelago, the Solomons, and the Fiji Islands. Among the Fijian examples which the writer has seen, no species occurs on more than a single island. Although the type locality of Fairmaire's four species is, unfortunately, merely "Îles Viti," all of the specimens of his *guttulatus* and *flexuosus* which I have seen in good series are from the island of Viti Levu. It is probable that a high degree of island endemism will be found to obtain among the species of this genus. Island endemism is often an important feature of island groups, and nowhere are careful locality data more useful than in the insect study of the Pacific archipelagos.

Dioxypterus guttulatus, Fairmaire, and *D. flexuosus*, Fairmaire, appear from their *facies* to be more closely related than the rest of the Fijian species (the writer has not seen *vagepictus*, Fairmaire, or *nigrotransversus*, Fairmaire), and they are structurally somewhat different. Both have the margins of the mesosternal cavity projecting obliquely (higher anteriorly) from the general plane of the metasternum and abdomen, whereas, in the other Fijian species before me, the margins of the cavity are in the same plane as the posterior part of the ventral surface, in other words, horizontal.

Dioxypterus venustus, sp. n., from the Solomons, may eventually be relegated to another genus by reason of its completely margined front; in other important respects it exhibits all the characters of *Dioxypterus*, in which genus it may be left, at least until the group is better known.

Dioxypterus muiri, sp. n.

Male, 10·0 mm. long; 2·75 mm. wide.

Yellowish-brown, shiny. Antennae black, with three basal joints reddish; the posterior margin and hind angles of the pronotum, as well as a vague lateral suffusion at the base, are black. Scutellum flavous with the apex dusky. The posterior two-thirds of the elytra are black, with the anterior margin of this black area irregular and slanting obliquely rearward toward the suture; a vague blackish suffusion extends forward from this black area, widening behind the scutellum. Across the middle of the black elytral area is a well-marked, narrow, angulated fascia of luteous hairs; behind this is a vague, median grouping of luteous hairs. Pubescence short and fine, entirely yellowish on the pronotum, but on the elytra (except for the luteous fascia) the pubescence on the yellowish areas is yellowish, that on the black, black. Underside yellowish-brown, with the lower edge of the mucro, and the posterior margin and hind angles of the prosternum, black; legs orange, tarsi slightly darker.

Fig. 3.—*Dioxypterus muiri*, sp. n.

Front flat with margin prominent on either side toward the eyes; finely and closely punctulate. Third antennal joint narrower and slightly shorter than the fourth. Punctulation of pronotum very fine. Prothorax convergent anteriorly, sharply narrowed from base of posterior angles to anterior one-third, thence more sharply; posterior angles flaring slightly from the general outline of the sides; tips subparallel, bicarinate.

Scutellum strongly convex, acutely narrowed posteriorly. Elytra as wide as prothorax, subparallel to about middle, thence narrowed abruptly; divergent along suture toward apex; tips obliquely acute. Striae consisting of lightly impressed punctures; intervals flat except for convex base of third interval.

Described from a single male, Rewa, Viti Levu, Fiji Islands, 1906 (*Muir*). Named in honour of the late Dr. Frederick A. G. Muir, whose services to Hawaiian entomology were so outstanding. The type is in the type collection of the Hawaiian Entomological Society, Honolulu, Hawaii.

What may be a variety of this species is an imperfect specimen in the British Museum, from the mountains near Penang, Viti Levu, Fiji Islands, 20.10.1927 (*W. Greenwood*). It has only the two, instead of the three, basal antennal joints reddish, and in addition to the elytral pattern typical of *muiri*, has the basal one-fourth of the wing-covers black, with the posterior margin of this area vague and oblique; anteriorly this black area is broken by two flavous spots.

Dioxypterus taveuni, sp. n.

10·0–10·5 mm. long; 2·8–3·0 mm. wide.

Shining yellowish-brown, with posterior angles of pronotum blackish; scutellum black; posterior four-sevenths of elytra black (anterior margin of the black area roundly emarginate in the middle), with, posteriorly, a vague, variable longitudinal area clothed with cinereous hairs on a black background. Mandibles black at tips; antennae black, with two basal joints rufous. Underside of body flavous except for mesosternal epimeron, metasternum and metathoracic episternum which are black; legs flavous, with tarsi blackish. Pubescence fine, black on black areas (except as noted above), golden yellow on yellowish areas.

Front nearly flat, finely punctulate. Third antennal joint nearly as long as fourth, but narrower.

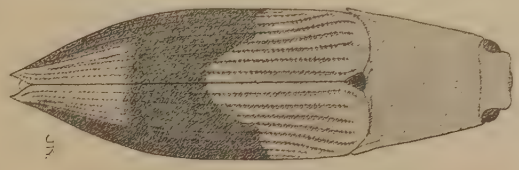


Fig. 4.—*Dioxypterus taveuni*, sp. n.

Prothorax as long as wide (female), or slightly longer than wide (male). Sides nearly straight, strongly narrowed from tips of posterior angles. Posterior angles bicarinate, carinae black. Punctulation very fine and close-set even on disc; slightly coarser on lateral margins. Scutellum convex, elongate.

Elytra as wide as prothorax; subparallel to beyond middle (female), or narrowed from basal one-third (male); apex obliquely acuminate; striae finely punctate, punctures light, most deeply impressed toward the base; intervals finely punctate, flat, basally convex.

Described from type female, Taveuni (Waiyevo), Fiji Islands, 26.ii.1924 (*Dr. H. S. Evans*) (633–24), and allotype male from the same locality, 21.xi.1923 (*Dr. H. S. Evans*) (474–11–23).

Dioxypterus wakayensis, sp. n.

Female, 11·0 mm. long; 3·3 mm. wide.

Reddish-orange, antennae black except for two basal joints which are rufous, the tips of the posterior pronotal angles, which are blackish, and the black scutellum; beginning at the anterior one-third of the elytra, a black longitudinal fascia extends on either side to the apex; behind the middle these are connected by a wide black transverse band (concave on its anterior margin) attaining the suture; before this transverse band the longitudinal black area covers intervals 5–9, while behind it is narrower; covering intervals 6–9. Behind the transverse band intervals 1–5 are rufous and clothed with a golden pubescence. A vague flavous area lies on either side of the scutellum. Beneath, more or less uniformly reddish-orange, except for posterior margin of the prosternum, the meso- and metathoracic epimera, and the lateral two-thirds of the metasternum and of the posterior coxae, which

are black. Legs reddish-orange with tarsi dusky. On the upper surface the pubescence is blackish on the black areas, yellowish on the orange; beneath, the pubescence is uniformly tawny.

Front flat, finely and closely punctate. Third antennal joint shorter and narrower than the fourth.

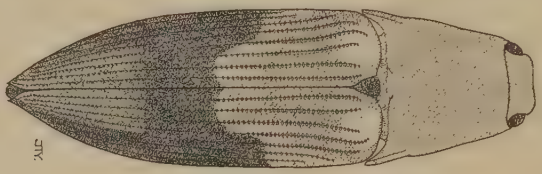


Fig. 5.—*Dioxypterus wakayensis*, sp. n.

Pronotum narrowed regularly from near the tips of the posterior angles to the anterior margin, with the sides almost straight; posterior angles flaring slightly from the general outline, with their tips faintly incurved. Punctulation fine and even, slightly coarser near the anterior margin. Posterior angles bicarinate, the carinae subparallel and of about equal length, blackish. Basal canaliculation faint. Scutellum very convex, sharply narrowed posteriorly.

Elytra as wide at base as prothorax, widening slightly to beyond middle, thence sharply narrowed to apex; diverging from the suture toward the tips, the apex obliquely acuminate. Striae consisting of lightly impressed punctures; intervals finely punctate, flat except base of third interval, which is convex.

Described from a single female, Wakaia, Fiji Islands, xii.1925 (*C. T. McNamara*).

Colour and dorsal pattern as in *taveuni*, except that the yellow-haired, median, distal area on the elytra has the underlying integument rufous instead of black. The prothorax is not so strongly narrowed anteriorly as in *taveuni*, and is more strongly convex anteriorly in cross section. The two are closely related and *wakayensis* may be but a variety of *taveuni*, although the writer thinks this unlikely because of the differences in the prothorax in the type specimens of the same sex.

Dioxypterus ovalauensis, sp. n.

Female, 10·0 mm. long; 2·8 mm. wide.

Piceous, shiny, pronotum slightly metallic; dense luteous pubescence; antennae black, with two basal joints and portion of the third, rufous; an irregular basal mark on intervals

Fig. 6.—*Dioxypterus ovalauensis*, sp. n.

2–4 of each elytron, yellow; a golden oblique fascia just before the middle of each elytron, attaining the lateral margins, but not the suture, strongly emarginate on its posterior margin; another oblique fascia, yellowish, on the posterior one-third, attaining the suture, but not the lateral margins; behind this posterior fascia the elytra are brownish medianly.

Underside, in general, brown, with mucro and middle of prosternum black, and the elytral epipleurae and sides of the prosternum, yellowish; legs yellowish-brown.

Front gently convex with two vague lateral impressions; punctulation fine and close. Third antennal joint narrower than fourth, and about two-thirds its length.

Prothorax moderately convex anteriorly; punctulation fine and close; sharply narrowed anteriorly from basal one-third; the posterior angles flaring outward, but incurved at tips, bicarinate. Basal median canaliculation feeble. Scutellum elongate, convex; posteriorly sharply narrowed.

Elytra at base as wide as prothorax, widening to beyond the middle, thence narrowed to the obliquely acuminate tips. Strial punctures well impressed; intervals strongly convex apically, and at base.

Described from a single female, Ovalau, Fiji Islands, ii.1927 (*H. W. Simmonds*) (C 52).

Dioxypterus venustus, sp. n.

14·5 mm. long; 4 mm. wide.

Shiny; generally black with the prothorax orange, except for a median subtriangular mark on the anterior margin, a smaller median basal mark, the posterior margin, and the hind angles, all of which are black. Base of intervals 2–4 of elytra with a slightly oblique, oval, orange mark, about one-fourth length of elytra, which does not attain the basal margin; about one-third the distance from the apex a narrow transverse fascia consisting of yellow hairs on a black background. Mouth-parts black, except for rufous palpi. Antennae entirely black. Body beneath, black except for propleurae (basal margin excepted) and legs, which are orange to yellowish. Pubescence fine and sparse, of the same colour as the integument which it overlies (except as noted above). Pubescence on the underside, ashy.

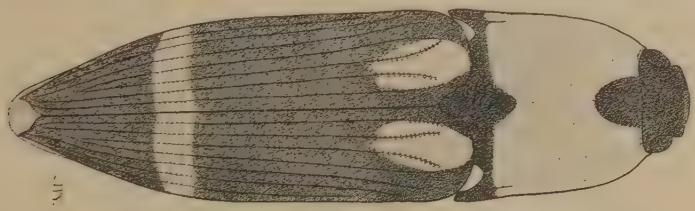


Fig. 7.—*Dioxypterus venustus*, sp. n.

Front moderately inclined, rounded; definitely margined medianly; convex, with vague longitudinal impression on either side; punctation coarse and rather close-set. Antennal joints compressed, strongly serrate; the third similar to, and of about the same length as, the fourth.

Prothorax subquadrate, rather strongly convex; sides parallel at middle, narrowed on anterior one-third; sides posteriorly very slightly divergent nearly to tips of hind angles, which are sinuate. Punctulation extremely fine and sparse. Posterior angles bicarinate with carinae more or less black even beyond the basal black margin of the pronotum. Scutellum convex, strongly declivous, bluntly rounded behind.

Elytra as wide as prothorax, subparallel to posterior one-fourth. Striae feebly impressed, consisting of rows of rather fine punctures. Apex obliquely emarginate with a short spine exteriorly.

Described from a single specimen, probably a female, Berande, British Solomons, 18.ix.1931 (*R. J. A. W. Lever*). Berande is a station on the north-east coast of Guadalcanal Island.

This insect has only slight superficial resemblance to Fijian *Dioxypterus*; it is generally parallel in form, rather than narrowed before and behind, and has the pronotum definitely more convex in cross section than is usual in this genus. More significant is the fact that the middle of the front is definitely, instead of vaguely, margined. Otherwise it has all the characters of *Dioxypterus*. Eventually it may be desirable to erect another genus for it.

Simodactylus, Candèze.

1859. Monogr. Elat., **2**: 169.

(Type *Aeolus cinnomomeus*, Boisduval.)

Simodactylus acutus, sp. n.

Females, 10·5–11·25 mm. long; males, 9·75–11·0 mm. long.

Uniformly castaneous, rather shiny, clothed with thick tawny pubescence somewhat obscuring the colour of the integument; antennae reddish-brown, underside generally reddish-brown, with propleurae and elytral epipleurae flavous; legs light brown to flavous.

Front gently convex, finely and closely punctate. Antennae short, third joint nearly as long as the fourth, but more slender; strongly serrate from fourth joint on; beginning with the third, joints longitudinally carinate on outer face.

Pronotum longer than wide, even in female; posterior one-third gently divergent to tips of hind angles; subparallel along middle third; narrowed on anterior one-third (in the male this narrowing is more gradual, beginning at about the middle). Posterior angles long, acute, bicarinate, with the outer carina very close to the outer margin. Punctulation fine and close, under high-power subumbilicate with a few smaller simple punctures intermixed. Mucro nearly horizontal behind the anterior coxae. Scutellum flat, sides subparallel, posteriorly rounded.

Fig. 8.—*Simodactylus acutus*, sp. n.

Elytra as wide as prothorax, strikingly convex in both transverse and longitudinal aspects. Subparallel to beyond middle (female), or narrowed from the anterior one-third (male); apex strongly emarginate, the tips mucronate with the outer tooth much the longer. Elytra near the apex posteriorly divergent from the sutural line. Striae feebly impressed, the punctures light; intervals flat, except toward base where they are convex; punctation rather coarse.

The posterior margin of the last abdominal segment is evenly rounded in the male, truncate or vaguely emarginate in the female.

Described from a type female, an allotype male, four paratype females and six paratype males, all from Taveuni (Waiyevo), Fiji Islands, 1923–1924 (*Dr. H. S. Evans*). (Nine at 500–600 feet, two females "beaten from guava spinney," and one at light.) All of this material is in the British Museum except for a paratype female and a paratype male retained for the collection of the Hawaiian Entomological Society.

Besides its smaller size and the emargination of the elytral tips, this species has other features to distinguish it from *S. cinnamomeus* (Boisduval): (1) the elytra are strikingly convex from base to apex; in *cinnamomeus* the convexity is only moderate; (2) the mucro in this species is horizontal, whereas in *cinnamomeus* it is plainly upcurved: (3) the scutellum is only roundly narrowed posteriorly; in *cinnamomeus* it is more acute.

From *S. pembertoni*, Van Zwal., this species can be separated by the relatively broader prothorax, closer pronotal punctation, and the more pronounced longitudinal convexity of the elytra.

The aedeagus is similar to that of *cinnamomeus*, but is less robust and has the lateral lobes only feebly barbed at the apex.

From the male genitalia and the external characters there seems evident a close relationship between *Simodactylus* and *Roggeveenia*, Van Zwal.*; however, the antennal structure affords what the writer considers valid separating characters. Whereas all the species of *Simodactylus* known to him have the antennae strongly serrate and longitudinally carinate on their outer face from the third joint on, in *Roggeveenia* the serration is feeble, and the longitudinal carination is completely lacking on the antennal joints. The prosternal sutures in *Roggeveenia* are slightly open anteriorly, not closed as implied in the original description.

Since the above was written, I have found it necessary to modify my opinion and now consider that *Roggeveenia*,* from Samoa, should be placed in synonomy under *Simodactylus*, Candèze. The characters which I formerly believed to separate *Roggeveenia* from related genera are: (*a*) the absence of a median carina along the outer face of the antennal segments; and (*b*) the acutely-spined apex of each elytron.

These characters no longer seem to me of generic value for the following reasons. A Philippine species of what is beyond question a *Simodactylus*, likewise lacks a carina on the antennal joints; the presence or absence of such carina is not a sexual difference. The discovery of *Simodactylus acutus* in the Solomons reveals an apical structure of the elytron more or less intermediate between the single-spined elytron of *Simodactylus buxtoni*,* upon which *Roggeveenia* was founded, and the bi-spinose condition in *S. pembertoni* † from New Britain, in which the distal spine, although the longer, more nearly approaches the sutural spine in length. Divergence from truncate to unispinose and bi-spinose elytral tips is to be found in other genera within the family, notably in *Semiotus*, Eschscholtz.) ‡

Anchastus, LeConte.

1853. Trans. Amer. Phil. Soc., **10**: 459.

(Type *Anchastus digitatus*, LeConte.)

* 1928, *Insects of Samoa*, Brit. Mus. (N.H.), **4**, (2): 120–121.
† 1931, *Proc. Hawaii Ent. Soc.*, **7**: 431.
‡ Communicated subsequently.—Ed.

Anchastus evansi, sp. n.

Female, 8·0 mm. long; 2·3 mm. wide.

Black, shiny. Pubescence extremely fine, tawny. Beneath, reddish-brown to black; legs reddish-brown, tarsi rufous.

Front convex, closely and finely punctate. Antennae blackish, approaching rufous toward tips; second joint about two-thirds the length of the third; third almost as long as the fourth.

Pronotum strongly convex in cross section; finely, evenly and closely punctulate; about as long as wide; gradually narrowed anteriorly from basal third. Hind angles produced straight back, slightly incurved at tips; sharply unicarinate. No trace of basal sulci, their normal position suggested by shallow impressions which do not interrupt the basal margin. Median basal canaliculation vague. Mucro nearly horizontal behind the anterior coxae.

Elytra slightly narrower at base than prothorax; strongly convex in transverse section; parallel for two-thirds their length. Striae finely punctate; intervals convex, finely punctulate.

Described from a single female, Taveuni (Waiyevo), Fiji Islands, 3.vi.1924, at light (*Dr. H. S. Evans*) (1488–24). This insect has much the superficial appearance of an *Ampedus* (*Elater*). The carina of the hind angles of the pronotum is very close to the lateral margin; in *vitiensis*, Van Zwal., it is strongly divergent.

Melanotus, (Megerle) Eschscholtz.

1829. Thon, Arch. Ent., 2 : (1) : 32.

(Type *Elater fusciceps,* Gyllenhal.)

Melanotus guambatae, sp. n.

10·0–11·5 mm. long; about 3·0 mm. wide.

Dark rufous, elytra slightly lighter; disc of pronotum vaguely, and lateral basal and sutural margins of elytra, blackish. Clothed with coarse, recumbent, ashy pubescence, somewhat obscuring the colour of the integument. Beneath, dark rufous to blackish, with legs lighter rufous.

Front somewhat produced, anterior margin sharply rounded; strongly convex medianly, with an impression on either side. Punctation coarse, umbilicate. Third antennal joint about as long as fourth, but narrower; joints 4–10 about as wide as long.

Prothorax convex, slightly longer than wide; sides converging gently and regularly from near tips of hind angles to anterior third, thence anteriorly more sharply narrowed. Hind angles in general contour of the outline of the sides, except for slightly incurved tips; strongly unicarinate. Punctation coarse, umbilicate, close, except on disc. Basal sulci strongly marked; median basal canaliculation feeble. Scutellum flat, anteriorly strongly notched, posteriorly rounded.

Elytra strongly convex longitudinally; as wide as prothorax; narrowed gently from base to posterior third, thence more sharply to apex. Striae consisting of coarse punctures which are more feebly impressed posteriorly; intervals flat (except at base), punctulation rather coarse.

Tarsi coarsely haired; pectination of claws coarse.

Described from a type male, and two paratype (probable) males, Guadal-

canar.* Solomon Islands, i.21 (*J. A. Kusche*), in W. M. Giffard collection, B. P. Bishop Museum, Honolulu, Hawaii.

Coloration similar to *albertisi*, Candèze, from New Guinea. The two species differ in the following respects :

1. Pubescence coarse, whitish, recumbent in *guambatae*; much finer in *albertisi*, semi-erect and, on the disc of the pronotum, obscure.

2. Punctation much coarser than in *albertisi*: definitely umbilicate and more deeply impressed on head, pronotum and underside.

3. The prothorax in transverse section, and the elytra from base to apex, more strongly convex than in *albertisi*.

* Guadalcanar is a variant of Guadalcanal, the name given to the island by the Spanish navigators; the native name is Guambata. The wide variety in the spellings of identical Pacific names is due : to the non-existence of written native languages at the time of the voyages of discovery, to the fact that the phonetic spellings of the discoverers were based upon several European languages, and to the absence of certain consonants in some of the island tongues, for which substitutions were made on the basis of the transcribers' familiarity with another dialect.

ZWEI NEUE *BRACHINUS*-ARTEN (COL., CARABIDAE) AUS DEM MORGENLANDE

Von Max Liebke.

(*Hamburg.*)

Brachinus (Brachynolomus) ciliatus, sp. n.

Rotgelb, glänzend, Flügeldecken leuchtend blaugrün, Mittel- u. Hinterbrust sowie der Hinterleib schwarzbraun, Fühler braungelb mit 2 gelbroten Basalgliedern, Beine schwarzbraun, Trochanter, Knien und Tarsen gelbrot. Ein Exemplar hat auf dem Scheitel einen kleinen schwarzen Fleck; Schildchen gelbrot, ebenso ein sehr schmaler Seitenrand um dasselbe herum

Kopf mit mässig grossen, wenig vorstehenden Augen, Kopfschild grob, zerstreut punktiert, nur der Scheitel ist glatt, Grund fein netzmaschig gerunzelt. Halsschild herzförmig, kürzer als der Kopf, so lang wie breit; Vorderrand fast gerade, Seiten vor der Mitte stark gerundet erweitert, hinter derselben verengt, im letzten Drittel deutlich ausgeschweift. Mittellängslinie kräftig eingedrückt, Seiten fein gerandet, Scheibe grob quergerunzelt, dazwischen grob punktiert, Grund netzmaschig gerunzelt und sehr fein punktiert. Schildchen an der Basis nicht ganz so breit wie lang, an der Spitze kurz abgerundet. Flügeldecken mässig lang, gewölbt, an der Schulter mässig breit, Schulterwinkel deutlich hervortretend, doch gut abgerundet, Seiten von hier an bis fast zur Spitze leicht gerundet gleichmässig erweitert, gegen die Spitze wieder leicht verengt, Spitzenrand gerade abgestutzt. Spitzenhautsaum schmal, mit äusserst kurzen und feinen Härchen am Hinterrande besetzt. Von Zwischenräumen ist kaum eine Spur auf den Flügeldecken zu sehen, die meisten Exemplare sind vollkommen glatt. Die Oberfläche ist fein und ziemlich dicht punktiert, die Punkte vielfach querrunzelig verbunden, Grund fein netzmaschig gerunzelt. Länge 6–7·8 mm.

6 Exemplare aus Palästina (leg. *Bodenheimer*) im Imperial Institute of Entomology, London und in meiner Sammlung.

Gehört neben *B. limbellus*, Rttr., und *hoffmanni*, Lbk., zwischen welche beiden Arten in meiner *Brachynolomus*-Tabelle (1928, *Ent. Anz.*, **8** : 18–19) sie eingesetzt werden muss.

Der Spitzenhautsaum ist noch schmäler und die Randbörstchen desselben sind noch bedeutend feiner als bei *hoffmanni*, das Schildchen ist etwas breiter

als dort, der Halsschild hat die gleiche Form, nur sind die Seiten vor der Basis ein wenig mehr ausgeschweift. Die Flügeldecken sind wesentlich breiter, von erhöhten Zwischenräumen sieht man nur bei einzelnen Exemplaren eine leise Spur im ersten Drittel der Länge. Auch die Färbung der Flügeldecken und der Beine ist unterschiedlich. Von *limbellus* unterschieden durch kürzeren Halsschild, längeres Schildchen und durch gerade abgestutzte Spitze der Flügeldecken.

Brachinus (s. str.) **irakus,** sp. n.

Rotgelb, matt glänzend, Flügeldecken einfarbig blaugrün, Mittel- und Hinterbrust sowie Hinterleib oben und unten schwarz. Fühler und Beine einfarbig gelbrot.

Kopf mit grossen, mässig vorstehenden Augen, Schläfen so lang wie die Augen, Hinterkopf und Seiten dicht und ziemlich grob punktiert, Scheitel glatt. Halsschild so breit wie der Kopf, kaum länger als breit, herzförmig, Vorderrand ausgeschweift, Seiten vor der Mitte gerundet erweitert, fein gerandet, hinter der Mitte ausgeschweift verengt, Hinterwinkel spitz vorragend. Mittellängslinie fein eingedrückt, Oberseite gleichmässig mittelfein und nicht sehr dicht punktiert. Schildchen gross, gleichschenklig. Flügeldecken etwa ein Drittel länger als breit, mit deutlich erkennbaren Schulterwinkeln, diese leicht abgerundet, Seiten hinter denselben allmählich erweitert, an der Spitze leicht nach innen abgeschrägt gestutzt. Spitzenhautsaum ziemlich breit, mit einer sehr dichten Reihe äusserst kurzer Börstchen und einigen weit auseinanderstehenden langen Wimperhaaren besetzt. Die Zwischenräume sind leicht gewölbt, doch nicht rippenartig. Die ganze Oberfläche ist mit feinen flachen Punkten besetzt, im Grunde äusserst dicht und äusserst scharf eingegraben netzmaschig gerunzelt, dadurch vollkommen matt.

Länge 10 mm.

Zwei Exemplare aus Karradah, Irak (leg. *Dutt*, 1921) im Imperial Institute of Entomology, London und in meiner Sammlung.

Gehört zwischen *ejaculans*, Fisch., und *crepitans*, L., von ersterem unterschieden durch die flachere Wölbung der Flügeldecken-Zwischenräume,welche durchaus nicht gerippt sind, von letzterem durch schmäleren Halsschild, viel breiteren Flügeldecken-Hautsaum und sichtlich breitere Flügeldecken.

ON THE TYPES OF *JAPYX SOLIFUGUS*, HALIDAY, AND *JAPYX WOLLASTONII*, WESTW. (THYSANURA ENTOTROPHA, JAPYGIDAE)

By F. Silvestri, Hon. F.R.E.S.

I have had the pleasure of examining the types of two species of Japygidae : *Japyx solifugus*, Haliday, and *J. wollastonii*, Westw., preserved in the University Museum of Oxford, through the kindness of Emeritus-Professor E. B. Poulton, to whom I tender my best thanks for permission to examine and re-prepare slides of the specimens.

I.

Japyx solifugus, Haliday.

The type material in the Oxford Museum was composed of two specimens mounted on cards, and having the label "*Japyx solifugus* Haliday in Trans. Linn. Soc. 24. 442, Pt. 44—Italy."

One specimen was entire and has a length of 8 mm.; the other is in two pieces, being broken between the first and second abdominal segments. I cleared the perfect specimen in potash, leaving the other in the same condition as it was found and mounted both on a slide in balsam, this being the best preservative.

Genus *Japyx*, Haliday.

Antennae 28-articulatae; maxillae laminis pectinatis quinque instructae; abdominis segmentum septimum quam sextum paullum et quam octavum parum latius et longitudine eisdem subaequale; segmentum nonum quam octavum brevius; urosternum primum organis subcoxalibus duabus (utrimque singulo) et organo glandulari mediano disculis nonnullis composito instructum; forceps brachiis asymmetricis, singulo dente armato et margine praedentali tuberculis marginalibus longitudinaliter biseriatim (serie supera et serie infera), margine postdentali crenulato.

Species typica: *Japyx solifugus*, Haliday (secundum marem typicum adultum).

♂. Antennae 28-articulatae (et non magis quam 30-articulatae ut Haliday scripsit), abdominis tergita setis subanticis sublateralibus (a) segmenti secundi sat longis et a segmento dicto ad sextum gradatim brevioribus et segmenti septimi nullis; tergitum septimum angulis posticis retrorsum subacute μ 80 productis; urosternum primum organis subcoxalibus setis brevioribus numerosis subbiseriatis instructis; forceps brachio dextero dente praemediano et margine praedentali tuberculo supero et tuberculis duobus inferis, brachio laevo dente submediano et margine praedentali tuberculis superis 4 et inferis 6; long. corporis mm. 8.

Having examined the exposed characters very clearly in the male adult type specimen, it was very easy to refer to the same species specimens from a number of localities of central and south-west Italy, among which I have selected, as paratypes, specimens collected in the Villa Umberto 1° in Rome, which are here described in both sexes.

Japyx solifugus, Haliday.

(Figs. 1–2.)

Japyx solifugus, Haliday, Trans. Linn. Soc., **24**: 442, Pl. 44, figs. 1–15.
Dicellura solifuga, Haliday (1865), J. Linn. Soc. (Zool.), **8**: 162.

Corpus cremeum forcipe praesertim lateribus et apice plus minusve pallide latericiis.

Caput supra setis c. 25 + 25 brevissimis, brevioribus et brevibus (his mm. 0,17 longis) instructum; antennae 28-articulatae, attenuatae, articulis primo et secundo setis brevioribus et brevibus paucis, articulo tertio etiam setis nonnullis parum longis (ad mm. 0,20) articulis 4–6 trichobothriis familiae typicis, articulo quarto trichobothrio supero submediano, trichobothrio supero laterali quam submedianum paullum magis ad articuli marginem anticum approximato sito, articulis ceteris, quinto decimo exempli gratia, aliquantum longioribus quam latioribus dimidia parte distali setis brevibus et brevioribus transverse subbiseriatis instructa; maxillae primi paris lobo interno laminis pectinatis quinque instructo; palpus labialis parum magis quam duplo longior quam ad basim latior apice conico.

Thorax. Pronotum setis sat longis (mm. 0,32) 6 + 6 et setis nonnullis brevissimis instructum, mesonotum praescuto setis duabus submedianis brevibus et duabus brevissimis, setis sat longis 5 + 5, brevibus vel brevioribus 5 + 5 et 3 + 3 brevissimis, metanotum mesonoto simile. Sterna setis paucis brevibus et brevioribus instructa sunt.

Pedes setis nonnullis brevioribus et setis brevibus vel parum longis sat numerosis, praetarsi ungue postico quam anticus parum longior, unguicula mediana breviore.

Abdomen. Tergitum primum praescuto eidem metanoti simili, scuto setis 4 + 4 brevissimis et 1 + 1 posticis submedianis-sublateralibus sat longis, tergita 2–6 setis 12 + 12, quarum sublaterales subanticae in secundo sat longae et a secundo ad sextum gradatim breviores, setae subanticae laterales supera et infera in secundo breviores a quarto gradatim longiores, setae posticae submedianae sublaterales 1 + 1 sat longae et laterales posticae 1 + 1 etiam sat longae; tergitum septimum setis subanticis sublateralibus evanidis, setis lateralibus et posticis eisdem tergiti sexti similibus; tergitum sextum angulis posticis

subrectis, tergitum septimum angulo postico manifeste in angulum breviorem subacutum producto, tergitum octavum lateribus postice vix productis.

Urosternum primum organis subcoxalibus urosterni latitudinis $\frac{1}{4}$ occupantibus, setis marginalibus glandularibus brevioribus 7–8 subaequalibus μ 50–60 longis vel nonnulla quam ceterae parum breviore et setis minimis ad latera setarum glandularium et nonnulla intermedia instructis, organo glandulari mediano disculis 12–16 inter sese tangentibus constituto, urosterni superficie ante organa subcoxalia serie setarum breviorum (c. μ 65 long.) et nonnulla minore, superficie cetera setis brevibus paucis transverse triseriatis et setis brevissimis parum numerosis; urosterna cetera setis brevibus transverse subquatriseriatis et setis brevissimis nonnullis instructa.

Segmentum ultimum supra mensum subaeque longum atque latum carinis nullis macrochaetis 5 + 5, quarum 1 + 1 subposticae sublaterales sunt, acropygio breviore angulis rotundatis.

Fig. 1.—*Japyx solifugus*: 1. antennae dexterae pars proximalis prona; 2. eiusdem articulus quartus pronus magis ampliatus; 3. antennae dexterae articulus duodecimus pronus; 4. maxillae primi paris lobi interni pars distalis; 5. labii menti dimidia pars; 6. pes paris tertii; 7. eiusdem pedis tarsi apex et praetarsus magis ampliati; 8. urotergiti septimi pars postica lateralis; 9. feminae urosterni primi et secundi dimidia pars; 10. feminae urosterni pars postica magis ampliata; 11. eiusdem organi subcoxalis particula magis ampliata; 12. forcipis brechium dexterum supinum; 13. maris urosterni primi pars postica; 14. maris organis subcoxalis retrorsum extrusi particula multo ampliata et 15. organis subcoxalis retracti particula; 16. urosterni primi organum glandulare medianum posticum retractum; 17. eiusdem organi extrusi superficies; 18. maris urosterni tertii et 19. urosterni quarti particula antica mediana; 20. maris apertura genitalis cum papillis.

Forceps brachiis gradatim attenuatis asymmetricis: dextero dente praemediano sat magno, margine praedentali tuberculo supero et tuberculis duobus inferis, margine postdentali parum profunde crenulato; brachio laevo dente submediano sat magno margine praedentali tuberculis perparvis superis 4, tuberculis inferis etiam perparvis 4–7; brachiorum superficie setis superis et marginalibus sat longis 10–12 et nonnullis brevissimis instructum.

Mas. Urosternum primum organis subcoxalibus quam eisdem feminae parum latioribus, setis glandularibus numerosis transverse subbiseriatis μ 40 longis et inter setas serosi posticae setis 3–4 μ 52 longis nec non setis minimis posticis eisdem feminae similibus

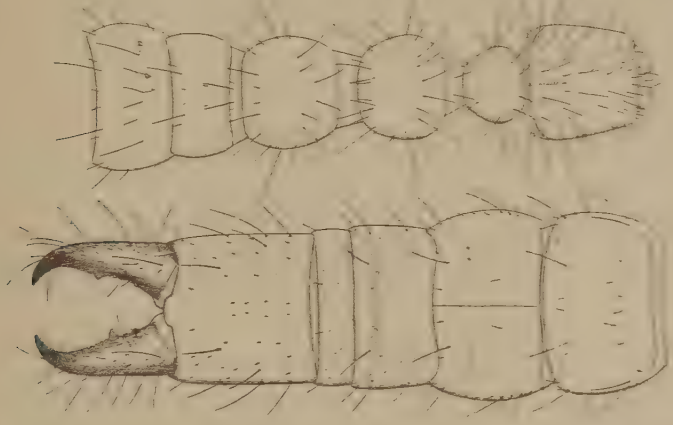


FIG. 2.—*Japyx solifugus*: 1. caput, thorax et segmenta duo abdominalia prona; 2. abdominis pars postica prona a segmento sexto.

instructo; urosterni tertii pars antica mediana prope praesternum fovea transversa subelliptica et urosterni quarti pars mediana antica fovea parva numerosis setis instructis.

Long. corporis ad mm. 8–10; lat. mesothoracis segmenti 0,90–1,00 long. antennarum 2, pedum paris tertii 1,70.

Habitat. Exempla paratypica descripta Romae. Villa Umberto I°, loco fuerunt. exempla alia vidi ex Etruria: Granaiolo. Firenze; Calabria: Mouteleone; Campania: Portici.

Remarks on Haliday's Description and Figures.

The conclusion reached above is based on the type specimens I have examined, but it is necessary to note that Haliday may have had in his hands specimens of two or more species when he wrote the description published in the Trans. Linn. Soc., because he recorded the antennae as "of more than thirty joints" and drew those of the entire specimen with 32 joints. The figures of the forceps are very imperfect and different from that of the type specimens, but it is necessary to remember that the magnification was feeble and that the author, in his conviction that there was only one species of *Japyx* in Italy, France and Algeria, did not pay especial attention to the characters of it.

In conclusion it is more than probable that Haliday described *Japyx solifugus*, when he had under examination specimens of more than one species, but as the type specimens are in quite good condition for recognising a species, we must, as I have done, keep the name *Japyx solifugus* for the Italian *Japyx* which corresponds to the existing adult male type.

Remarks on Dicellura, *Haliday.*

The paper by Haliday published in Trans. Linn. Soc. (tom. cit.) with the title "*Iapyx, a new genus of insects belonging to the stirp Thysanura, in the Order Neuroptera*," and read January 21st, 1864, is for the period a very good paper, where the characters of the new genus *Iapyx* and the new family Iapygidae are well fixed: it is therefore very striking that the same author published in 1865 another short paper in J. Linn. Soc. (Zool.). **8**: 162–163, read January 21st, 1865, just a year after the first, of which I transcribe the greater part :—

"The genus is founded on an undescribed insect allied to *Campodea ambulans*, L. (sp. *Podura*) in general appearance and habits, but distinguished especially by having (in place of the pair of many-jointed filaments which terminate the abdomen in that species) a forceps like that which characterizes the Stirps *Labidura* in the same order. *Dicellura solifuga* appears to have a pretty extensive range in latitude, having been found, firstly, by Mr. Lucas in Algeria; afterwards at Paris, by the same author, who has received it also from the neighbourhood of Toulon: while the writer has found it in different parts of Central and Southern Italy. The institution of a family Dicelluridae is suggested to comprise the two genera named, and distinguished from the remaining circumscribed group of Lepismidae by the binary number of posterior appendages, the exarticulate tarsus, the simply falcated maxillae, without exterior lobe ("galea") or palpus; and, as to internal organisation, above all, by the want of Malpighian vessels."

Haliday shortly proposes in this paper the genus *Dicellura* with the type specimen *D. solifuga* and the family Dicelluridae for what he described in 1861 as *Iapyx*, *I. solifugus* and Iapygidae, therefore no doubt can exist about the perfect synonymy of *Dicellura*, etc., with *Iapyx*, etc. I have searched for an explanation of the mistake, and I have written to the Secretary of the Linnean Society of London asking if there could have been an error of 1865 for 1863 in the printed notice of the "Journal," but Mr. S. Savage, Assistant Secretary, after consulting authorities, such as Dr. C. D. Sherborn, kindly replied that no error of date occurred in the paper of Haliday published in 1865; therefore the strange fact remains that the same author published an incomplete paper on a new genus giving a new name after having published a complete paper a year before for the same genus named in accordance with all the rules of nomenclature.

In 1896 (Brandtia, p. 49) O. F. Cook proposed to retain Haliday's duplicate generic name *Dicellura* as an appropriate ordinal designation for the family Japygidae, but it is evident that the name of a genus synonymous with another cannot be used as a name of an order, and moreover it is my opinion that it is not necessary to elevate the Japygidae to ordinal rank. Handlirsh followed Cook in 1906 (Die fossilen Insekten, p. 14), but he returned to Grassi's view in 1925 (*in* Schröder, Handb. Ent., **3**: 401).

II.

Japyx wollastonii, Westw.

Two type specimens of this species were preserved in the Oxford University Museum mounted on card and labelled "*Japyx wollastonii*, West. Thes. ent. p. 196. pl. 37. f. 3. Wollaston, Madeira, The Southern Desert Bugio." Length of the dried specimens 9 mm.

I have cleared one in potash, and the other I have left as it was and re-prepared both on a slide in balsam.

From an examination of these specimens, I have come to the conclusion that the species must be referred to the genus *Parindjapyx*, Silv., described in (1931), Boll. Lab. Zool., Portici, 27 : 97, for some species of the Aegean Archipelago and I am able to give the following description.

Parindjapyx wollastonii, Westw.

(Fig. 3.)

Japyx wollastonii, West.

Corpus pallide ochraceum abdominis parte postica a segmento octavo ultimum, forcipis marginibus et apice badio-nigrescentibus.

Caput supra setis paucis sat longis lateralibus mm. 0,28 et setis nonnullis brevibus instructum; antennae 34-articulatae quarto tertium longitudine subaequante, sensilio unisetis cruciformibus dorsualis proximum ad ortum basim perpetuum, sensilio dorso-

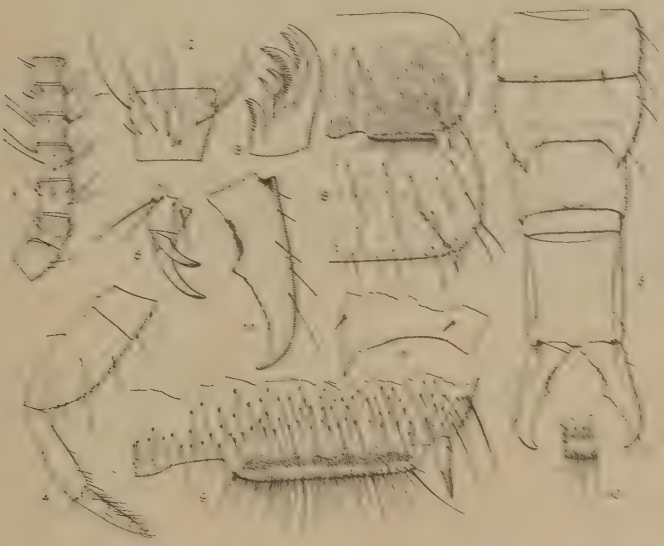


Fig. 3.—*Parindjapyx wollastonii* : 1. antennae laevae pars proximalis prona ; 2. antennae dextrae articulus quartus pronus magis amplianus ; 3. maxillae primi paris lobi interni pars distalis ; 4. pes paris tertii a trochantere ; 5. eiusdem tarsi apex et praetarsus magis ampliati ; 6. abdominis pars postica prona a segmento sexto ; 7. urotergiti septimi pars postica lateralis ; 8. urosterni primi et secundi dimidia pars ; 9. urosterni primi pars postica magis amplianta ; 10. eiusdem urosterni organi subcoxalis particula ; 11. forcipis brachium dexterum exempli alii.

lateralli a basali multo remoto, setis ceteris nonnullis sat longis supera externa mm. 0,19 longa et setis nonnullis brevioribus ; maxillae primi paris lobus internus lamina pectinatis quinque, lamina singula pluridentata.

Thorax. Pronotum setis 5 + 5 sat longis et setis nonnullis brevibus et brevioribus instructum, meso- et metanotum praescuto setis submedianis 1 + 1, scuto setis sat longis (lateralibus mm. 0,42) 5 + 5 et setis nonnullis brevibus et brevioribus.

Pedes parce setosi setis nonnullis longis et nonnullis brevibus et brevioribus instructi, unguibus parum inaequalibus.

Abdomen: tergita a segmento secundo ad sextum setis sat longis 4 + 4 (duabus lateralibus subanticis ed duabus posticis laterali et sublaterali), setis anticis submedianis brevibus et a segmento tertio gradatim minoribus, et setis paucioribus brevioribus instructa; tergitum sextum angulis posticis subrectis, septimum angulis posticis retrorsum aliquantum (mm. 0,18) productis subtriangularibus apice angustiore acuto; tergitum octavum septimum longitudine subaequans et aliquantum angustius, lateralibus paullum angulatim productis; tergitum nonum brevius.

Urosternum primum organis subcoxalibus utrimque singulo, latis, setis glandularibus marginalibus c. 60 brevibus et nonnullis minus brevibus inordinatim biseriatis, setis minimis marginalibus posticis uniseriatis et ante marginem setis glandularibus brevioribus, ex area circulari orientibus crebris, 2–3 seriatis; superficie organo glandulari mediano parum lato setis minimis glandularibus c. 15 instructo; ante organum subcoxale laterale setis numerosis plus minusve brevibus 5–6 inordinatim seriatis; superficie cetera setis ut urosterna sequentia instructa, quae setis brevibus transverse 4-seriatis et setis nonnullis brevissimis aucta sunt.

Stili conici acuti; vesiculae latiusculae, brevissime.

Segmentum decimum supra mensum parum longius quam latius, carinis sublateralibus parallelis bene evolutis, acropygio brevissimo, superficie supera setis parum numerosis (in exemplis typicis fere omnibus abruptis).

Forceps brachiis subsimilibus, sat attenuatis, dente parum praemediano sat magno acuto, tuberculis praedentalibus $\frac{3}{5-7}$, margine postdentali vix crenulato.

Long. corporis mm. 9, lat. urotergiti septimi 1,30, long. antennarum 2, forcipis 0,92.

Habitat. Insula Madera: "The Southern Desert, Bugio"; exempla typica duo vidi.

A NEW SPECIES OF *ANOPHELES* (*MYZOMYIA* GROUP) FROM SOUTH-WEST PERSIA

By Frank Marsh, M.D., B.S., Lond., D.T.M. & H., Eng.

In the autumn of 1932, during the course of a mosquito survey for the Anglo-Persian Oil Co. Ltd. (this survey is fully described in the Annual Medical Report of the Anglo-Persian Oil Co. for 1932), the herein described Anopheline was discovered in the larval stage in two stagnant brackish pools (Plate 3).

Male and female adults were bred out from the larvae, but pupae unfortunately were not preserved and eggs were unobtainable.

The interest of this species, which has entirely unspotted wings, is that it was first identified as a variety of *A. algeriensis* (var. *turkestani*, Shingarew) and so considered one of the *Anopheles* group and not, as it clearly is, one of the *Myzomyia* group of the subgenus. The first indication that it was not *A. algeriensis* was given by the fact that the anterior clypeal hairs of the larva were not close together, but relatively wide apart. Later, the hypopygium was found to be of the *Myzomyia* group.

It is possible that this is the species described by Shingarew as *A. turkestani* and recorded as *A. algeriensis* var. *turkestani* by Martini. As the description given of var. *turkestani* is very brief, it is not possible to say, without examination of specimens which are not available, whether it is this species or not. In the meantime, while giving a description, it is considered desirable to give it the name of *A.* (*Myzomyia*) *apoci* after the Anglo-Persian Oil Company (A.P.O.C.).

Through the kindness of Sir Rickard Christophers the author has had the opportunity of going over the adult and larval forms in Sir Rickard's laboratory under his supervision, and the following description is the result.

I am greatly indebted to Mr. H. Cornes, cartographer to the A.P.O. Co., for the drawings reproduced in this paper.

Anopheles (Myzomyia) apoci, sp. n.

Adult Female. A small delicate Anopheline with entirely unspotted wings resembling in general appearance *A.* (*Anopheles*) *algeriensis* and, except for entire absence of spots on the wing, *A.* (*Myzomyia*) *dthali*. Length of wing 2 to 3 mm.

Head Scales. Narrow, only very slightly expanded, with 7 to 8 striations reaching three-quarters down scale, pale yellowish over both vertex and occiput, frontal tuft undeveloped. Interocular space triangular, the vertical chaetae forming a single row of about 4 or 5 on each side only and without any indication of a cluster anteriorly. Ocular scales entirely absent.

Palpi. Long and thin (palpal index 0·3), brown, entirely unbanded. Conspicuous black hairs on apical segment.

Antennae. Without scales on the torus or definite scales on first flagellar segment.

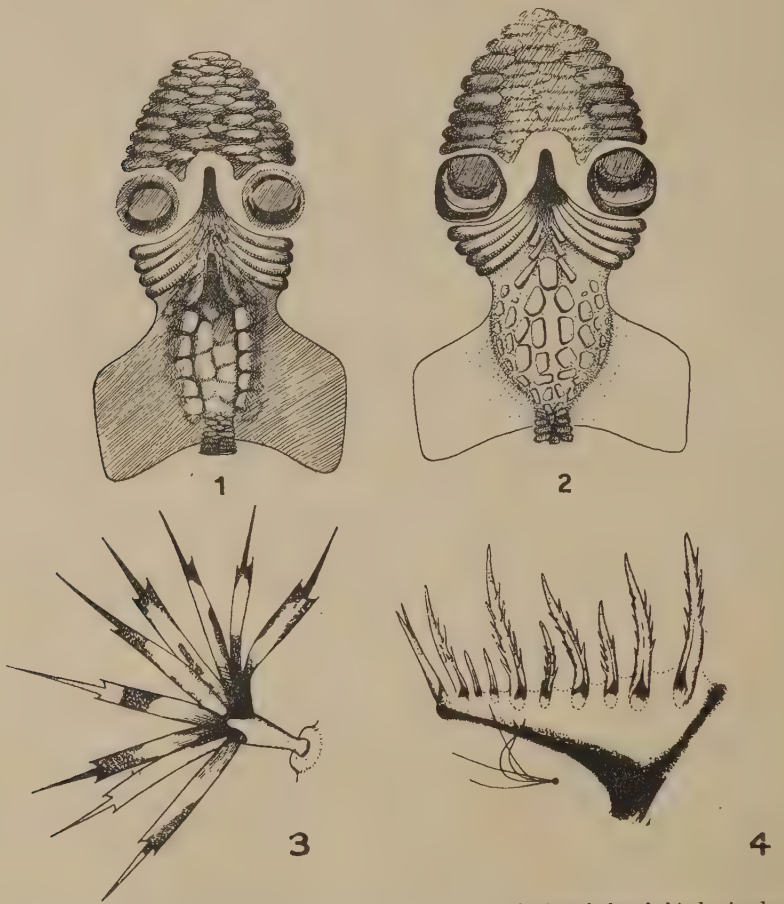
Proboscis. Dark except for labella which are pale.

Thorax. Anterior pronotal lobes (prothoracic lobes) with hairs only, propleural hairs on each side two only. Mesonotum yellowish or greenish, often almost translucent as in *A. dthali*; shiny with conspicuous light coloured setae and entirely devoid of scales even anteriorly. Upper mesepimeral hairs about two. Sternopleural about two in each group. Prealar inconspicuous or absent. Pleurae pale.

Pharyngeal Teeth. Pharynx of the usual *Myzomyia* type with double row of rods and cones. Cones with well-marked lateral teeth. Crest with single row of spines, posterior

view of crest narrow tapering. Filament with spicular processes; post filament teeth conspicuous. Rods tapering with expanded conical bases.

Wings. To the naked eye, pale with dark costa. Forked cells short. Posterior bifurcation about same distance as anterior from base of wing, the anterior cell about as long as its petiole. Costa uniformly dark. Wing-field without definite pale spots on any



FIGS. 1–4.—*Anopheles* (*M.*) *apoci*, sp. n.—Figs. 1–2, types of stigmal plate behind spiracles; fig. 3, palmate tuft on 4th abdominal segment; fig. 4, pecten.

vein. Fringe unicolorous. Apex without any pale tache. Scaling of wing very narrow, narrower even than in *A. dthali*.

Legs. Unicolorous. Femora dark to trochanters except beneath and posteriorly where they are pale. Knee spots not present. Tarsi entirely unbanded.

Abdomen. Dark and not usually showing the mottling commonly seen in *A. dthali*; entirely without scales even on cerci.

Male. In general as in the female. Palpi unicolorous, the last two segments narrowly clubbed and with dark setae apically. Coxites entirely devoid of scales.

Hypopygium. Of usual *Myzomyia* type. Parabasal spines five in number with the usual characters and arrangement. Harpago of usual *Myzomyia* character with club and a well-marked apical hair about as long as the body of the harpago and a shorter hair somewhat more than half its length between this and the club. Phallosome of usual type with 5 or 6 leaflets on each side, the longest leaflet about one-quarter the length of the phallosome measured to extreme base, the longest leaflet at least with some serrations along concave edge.

Pupa. Not available.

Larva. Full-grown larva is 5 to 6 mm. long, greyish-green in colour without any conspicuous spots on body.

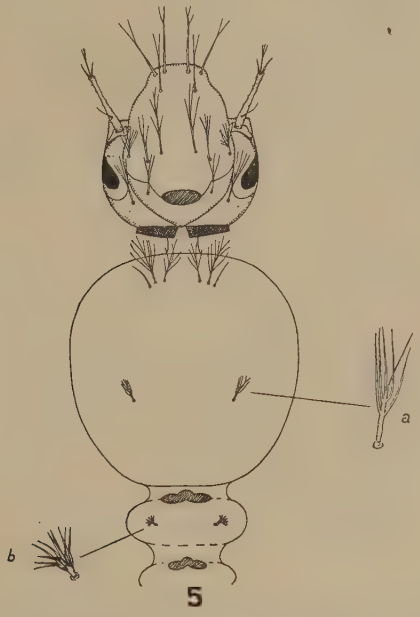


FIG. 5.—*Anopheles* (*M.*) *apoci*, sp. n., chaetotaxy of the head, thorax, and 1st abdominal segment, showing "shoulder-hairs," metathoracic hairs, and hairs on 1st abdominal segment.

Head. The head is almost black over the whole of the fronto-clypeus without definite pattern.

Inner anterior clypeal hairs are placed wide apart, the distance between their bases being about twice that between the bases of the inner and outer anterior hairs of one side. They appear simple on casual examination, but show a few irregularly placed fine lateral branches and generally a bifid tip under high power. Their average length is 0·28 mm. or nearly half the length of the fronto-clypeal plate. Outer anterior clypeal hairs have inconstant fine branches and are the same length as the inner anterior clypeal hairs. Clypeal hair index is 1·0. Posterior clypeal hairs comparatively slender, length 0·196 mm., carrying inconstant fine irregular branches. Frontal hairs stout, long and feathered, innermost having 4 to 8 branches, the intermediate 3 to 4 and the outer 5 to 18. The outer hair is less than half the length of the inner one, the tip of which reaches up beyond the bases of the inner anterior clypeal hairs. Sutural hairs, the inner is slender, less than half the

length of the inner anterior clypeal hairs and usually unbranched. The outer hair has 3 to 5 branches and is 0·2 mm. in length. Subantennal hair stout 0·35 mm. long, profusely branched along its whole length.

Antennae are comparatively short, 0·22 mm., being only about one-third the length of the fronto-clypeal plate and in length are about four times their breadth measured near the base. The internal surface of the antenna bears the usual spineous projections, though they are very few in number. The antennal hair is short, length equal to the breadth of the antenna near base, simple, and arises from the dorso-external surface one-third the length of the antenna from its base. The transparent cone-shaped piece is three times as long as the poorly developed finger-shaped piece; the pair of sabre-shaped pieces are equal in length to half the length of the antenna. The terminal hair is simple or bifid.

Maxillary Palp. The single finger-shaped appendage at the tip of the palp is nearly equal in length to the paired finger-shaped ones and to the cone-shaped appendage. The mentum bears seven teeth, of which the middle three are large, the submentum has two teeth, one on each side of the median double tooth.

Thorax. Dorsal submedian prothoracic hairs; inner hair fairly short, no conspicuous basal tubercle and with 4 to 6 lateral branches; middle hair about twice the length of the inner hair, without conspicuous basal tubercle and bearing 4 to 11 lateral branches. The outer hair is short and simple. Hair number one on the metathorax is small and has 2 to 5 branches.

Pleural Hairs. On the prothorax the anterior pair is very long, the dorsal hair is stouter and has seven branches, the ventral hair is simple. Of the posterior pair, the the ventral is simple and long and the dorsal is less than half the length of the other hair and has three branches. On the mesothorax the anterior pair is long, the dorsal having nine branches and the ventral hair being simple. Of the posterior pair the ventral is one-third the length of the anterior hair and the dorsal is rudimentary and simple. On the metathorax the anterior pair is long, the dorsal hair having seven branches while the ventral is simple. Of the posterior pair the ventral is short and slender and has two branches, while the dorsal is rudimentary. The tubercle of the prothoracic group has a pointed spine. Of the mesothoracic group the tubercle is poorly developed, but with a fairly distinct bifurcate projection. Of the metathoracic group the tubercle is poorly developed.

Abdomen. Hair number one on the first abdominal segment is transformed into a poorly developed palmate tuft with 6 to 12 leaflets and a distinct but only slightly developed shoulder and filament. The palmate tufts are well developed on segments two to seven, having 12 to 14 leaflets on segment two, 14 to 19 on segments three to six and 12 to 15 on segment seven. The leaflets are very transparent and usually not pigmented; the serration at the shoulder is not very deep and the filament is long, thin and pointed, on the average it is 0·5 the length of the blade of the leaflet. The average length of the blade of a leaflet from a mid-abdominal hair is 0·036 mm., that of the filament is 0·018 mm.

The indentations at the shoulder are usually well marked with one or no serrations.

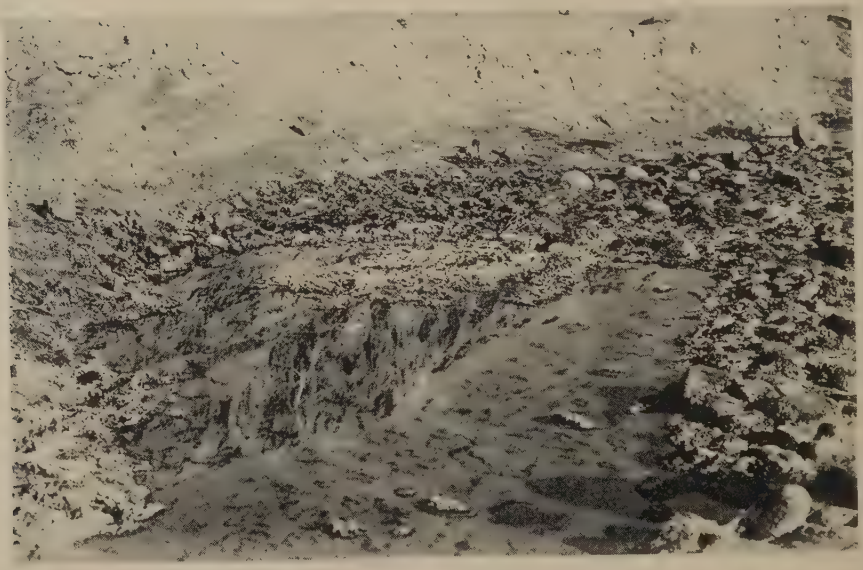
The lateral hairs are very long, stout and feathered on segments one to three, long and slender on segments four to six, splitting into 3 to 6 branches on segment four, 3 to 5 on segment five and 4 to 5 on segment six. The lateral hair on segment seven is short and has 4 to 5 branches.

The post spiracular hair is short with five branches.

The outer submedian caudal hair has 5 or 6 branches, the ends of which are curved to form hooks.

The inner submedian caudal hair has no stout hooked branches.

The anterior tergal plates are not wider than the dark midgut seen by transparency from the dorsal surface. The small rounded posterior tergal plate lies behind the anterior plate and in the middle of the dorsal surface of the segment, being absent on segment one. The submedian oval plates described for *A. culicifacies* by Puri are absent.



Habitat of larvæ of *Anopheles* (*Myzomyia*) *apoci*, **sp. n.**

Spiracular apparatus with the chitinisation along the posterior border of the spiracular opening very poorly developed, the fan-shaped plate and median plate deeply pigmented in fresh specimens. The spiracular pecten has 8 to 14 spinous processes, of which seven may be short and seven long, all the long ones being serrated on their dorso-external aspect.

The anal gills are very broad and only one-quarter the length of the anal segment.

Bionomics. The adults of this *Anopheles* were not observed in the wild state, although some thousands of Anophelines were captured every month in the immediate vicinity of the breeding pools. The importance of *A. apoci* as a vector of malaria seems negligible. It is intended to continue the study of this mosquito and to obtain the eggs.

I have to thank Sir Rickard Christophers for his very great kindness and assistance and for drawing my attention to the magnificent monograph by I. M. Puri on the larval stages of the Anophelines of India, which work I have followed very closely in the description of the larva of *A. apoci*. The description and nomenclature of the vertical area of the head here given is that used by Christophers in the "Fauna of British India, Culicidae, Anophelini" shortly to be published.

This paper is published by permission of Dr. M. Y. Young, C.I.E., Chief Medical Officer, Anglo-Persian Oil Co. Ltd.

EXPLANATION OF PLATE 3.

Above. An isolated pool fed by a submerged trickle charger-spring which just fails to balance the loss of water by evaporation; consequently the pool is very brackish.

Below. An isolated pool by the margin of a shrinking river; its water is also very brackish, and salt crystals can be seen shining on the surrounding earth and stones.

A NEW GENUS AND SOME NEW SPECIES OF APHIDS

By D. HILLE RIS LAMBERS.

(*Entomological Laboratory of Wageningen, Holland.*)

THE Aphids dealt with in the following paper were among the material which was sent me from the Imperial Institute of Entomology for identification. The types will be presented to the British Museum (Nat. Hist.), London, and co-types (so far as available) will be deposited in the British Museum and in the author's collection.

Geopemphigus, gen. n.

Type: *G. surinamensis*, sp. n.

Diagnosis.

Body globose, in apterae probably covered with wax secretion. Siphunculi absent in apterae. Anal porus dorsal, subanal plate with a pseudocaudal projection, but cauda totally reduced (fig. 1). Head with 8 wax-glands in two longitudinal rows, thorax and abdomen with 4–6 glands per segment. Wax-glands of Pemphigine type, but without a hair in the centre or a central facet as in ERIOSOMATINAE.

Head free from prothorax. Eyes of 3 ommata in apterae. Antennae of 5 or 6 segments, with rather long hairs. Primary rhinaria with a fringe of long hairs. Processus terminalis very short.

Tarsi of two segments, first joint of fore legs with 3, of mid and hind legs with 2 hairs. Only apterae known.

Geopemphigus surinamensis, sp. n.

Diagnosis: Apt. viv. fem.

Antennae about ¼ of length of body. Wax-plates present as follows: Head with four spinal plates. Prothorax to VIIIth abd. segment with spinal and lateral plates, the latter large, round except those on abd. segm. VII and VIII which are transversely oval to kidney shaped; from mesothorax to abd. segment III, moreover, a pair of pleural plates per segment, those on the mesothorax very small and indistinct. On abd. segment VI (ventrally) paired circular organs, the surface of which is reticulated like a *Tetraneura*

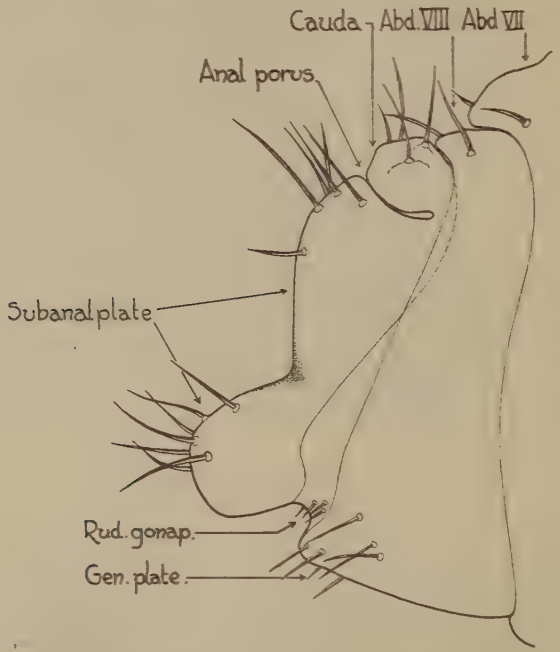


Fig. 1.—*Geopemphigus surinamensis,* sp.n., last abdominal segment.

wax-gland. Subanal plate in dorso-ventral view about rectangular. Rudimentary gonapophyses present, number not fixable.

Measurements of one specimen:

Length of body: 1·55 mm.
„ „ ant.: 0·39 „
Prop. of ant. segments as: $\frac{100}{III} : \frac{42}{IV} : \frac{58}{V} : \frac{84}{VI}$

Larva, 1st instar.

Body elongated. Antennae of 5 segments, all segments with hairs. Siphunculi absent. Hairs and wax-glands present as follows: from prothorax to VIIIth abd. segment, per segment 2 pairs of lateral hairs, 1 pair of pleural hairs, 1 pair of spinal hairs. On abd. segments II or III to VI, moreover, an irregular pair between the pleural and lateral hairs.

Wax-glands present as follows: one large circular just behind the two lateral hairs; one smaller plate awry outwards behind the spinal hairs; one irregular row after the interpleural hairs. Tarsi of 2 joints, first joint with 2 hairs. Cauda with 2 hairs, subanal plate and anal porus as in mature aptera.

Notes: Collected by *Mr. G. Buntschli* in Surinam, ii.1932, "on weed roots, going to coffee." This last note is possibly not quite correct. Dr. A. K. Mordvilko at Leningrad, U.S.S.R., to whom I sent this species, wrote me that he thought it an Eriosomatine, allied to *Tetraneura*, possibly living on grass roots, judging from the short ultimate rostral segment. The structure of the wax-glands points to a Pemphigine, but the subanal plate and dorsal anal pores, together with the absence of a hair in the centre of the wax-glands separates it from that group also. The location of this genus was not previously known to me.

Prociphilus micheliae, sp. n.

Diagnosis: Al. viv. fem.

Body large, with numerous fine hairs. On abdomen only stigmal plates and anal plate and cauda sclerotic. Wax-glands present: paired ones on the flat triangular hindpart of the mesoscutum, on abdomen on each segment a pair of marginal plates, 2–4 very small pleural plates on abd. segment I, 2 spinopleural ones on VIIIth segment. Wax-plates without central facet, of the common *Prociphilus* type, 1–2 hairs per plate. Antennae of 6 segments. IIIrd segment with 28–35 (average: 32·4), IVth with 8–13 (aver. 9·57) rhinaria, which are narrow and linear, encircling about $\frac{2}{3}$ of the segment and the chitinous border of which is furnished with a fringe of minute spines. Siphunculi absent. Cauda not developed. Most probably at 2nd tarsal segments with 2 hairs. Wings with media of fore-wings simple, in hind-wings both media and cubitus present, arising from same point.

Measurements of one specimen:

Length of body: 4·00 mm.
,, ,, ant.: 1·56 ,,
Prop. of ant. segments as: $\frac{100}{III} : \frac{45}{IV} : \frac{44}{V} : \frac{50}{VI}$.

Rhinaria: 30 on segm. III, 13 on IVth. (One antenna broken.)

Notes: "From curled leaves of Champ (*Michelia* sp.)." Jalpaiguri Div., Br. India, 25.iv.31.

This species differs in some respects from *Prociphilus*, by having no wax-glands on head and only two hairs on the 2nd tarsal joints, whereas 3–4 are present in *Prociphilus* sens. strict. (acc. to Börner, 1930,* p. 152).

Stomaphis mordvilkoi, sp. n.

Diagnosis: Apt. viv. fem.

Body large, covered with short hairs, which have very small circular, scleroites at their bases. Paired sclerotic spots spinally on abdominal segments I–VIII, increasing in size towards the cauda. Lateral sclerites absent, sclerotic plates around stigmata rather large. Antennae about $\frac{2}{7}$–$\frac{1}{3}$ of length of body. Segment III $1\frac{1}{16}$–$1\frac{2}{9}$ times length of VIth, Vth always about $\frac{1}{7}$ longer than IVth. Vth segment with 1–3 sec. rhinaria, VIth sometimes

* Börner, C. Beiträge zu einem neuen System der Blattläuse, in: 1931, *Arch. Klassif. Phylog. Ent.*, 1.

with one sec. (or accessory) rhin. past the primary one, on the base of proc. term. Siphunculi with narrow operculum, placed on large sclerotic cones, the max. diameter of which is about equal to the length of IIIrd ant. segment. Ventrally on abdomen a row of unpaired not much sclerotised hairless spots as in *S. quercus* (L.).

The colour most probably is dark brown or greenish-brown.

Measurements of one specimen :

Length of body : 7·30 mm.
„ „ ant. : 2·53 „
Diameter of siph. operculum : 0·13 mm.
„ „ siph. plates : 0·80 mm.
Prop. of ant. segments as : $\frac{100}{III} : \frac{49}{IV} : \frac{58}{V} : \frac{85}{VI}$

Notes : This species was " found in earth covered galleries on bark of walnut " at Darjeeling, India, 3.ix.29. I take pleasure in naming this species after Dr. A. K. Mordvilko. This author in his Food Plant Catalogue,* p. 35, mentions a *Stomaphis* from *Juglans manshurica*, which probably is this species.

With *S. quercus*, L., this species is distinct from others by the VIth ant. segment being longer than the IVth or Vth. It can be distinguished from *S. quercus*, L., by the diameter of the perisiphonal plate, which is less than half the length of IIIrd ant. segment in *S. quercus*, L., and equal to IIIrd ant. in our species. In *S. quercus*, L., the IIIrd ant. segment is $1\frac{2}{5}$–$1\frac{4}{5}$ the length of VIth, but here only $1\frac{1}{10}$–$1\frac{2}{9}$ times that length.

Periphyllus aesculi, sp. n.

Diagnosis : Al. viv. fem.

Body covered with long, rather thick hairs. Abdomen with sclerotic transverse bars (spino- pleural-) and hairy lateral sclerites from Ist to VIIIth abd. segment. Antennae of 6 segments with not many long and thin hairs. IIIrd ant. segment with 17–24 rhinaria usually nearly over whole length. Siphunculi shorter than common in this genus $\frac{2}{3}$–$\frac{7}{8}$ times as long as base of VIth ant. segment, beautifully reticulated from base to apex. Cauda not separated, indistinct, 4 rudimentary gonapophyses distinctly present.

Sclerotic are head, thorax, siphunculi, cauda and the mentioned sclerites on abdomen, so that these most probably are black or at least dark coloured in living specimens.

Measurements of one specimen :

Length of body : 3·25 mm.
„ „ ant. : 2·54 „
„ „ siph. : 0·15 „
Prop. of ant. segments as : $\frac{100}{III} : \frac{77}{IV} : \frac{57}{V} : \frac{(25 + 50, 9)}{VI}$

Rhin. on IIIrd ant. segment 21 and 23.

On *Aesculus indicus*, Loeah Valley, Kashmir, v.1918.

Notes : One *Periphyllus* has been recorded from *Aesculus glabra*, i.e., *P. aceris*, Koch. My species differs from others by the processus terminalis being only half as long as IIIrd ant. segment and only twice the base of VIth segment. Moreover, the siphunculi are shorter than the base of VIth ant. segment, which is uncommon also.

* Mordvilko, A. K. 1929, Food Plant Catalogue of the Aphididae of U.S.S.R., *Works Appl. Ent.*, **14**, Leningrad.

Macrosiphum brachytarsus, sp. n.

Diagnosis : Apt. viv. fem.

Body elongated oval, with a normal number of short inconspicuous hairs, which have no basal sclerites. Frontal tubercles very little developed, median stemma distinct. Antennae shorter than body, IIIrd segment at base with 1–3 small rhinaria. Antennal hairs very short, $\frac{1}{4}$–$\frac{1}{3}$ times diameter of IIIrd segment in length. Rostrum reaching to 3rd pair of coxae; apical segment rather short, normal $1\frac{1}{3}$–$1\frac{1}{2}$ times as long as second joint of hind tarsi (without the claws). Siphunculi about $\frac{2}{9}$ to nearly $\frac{1}{4}$ of length of body, slightly constricted at reticulated area, with a small flange, reticulated over distal $\frac{2}{9}$ part. Cauda normal $\frac{3}{4}$–$\frac{4}{5}$ of length of cauda, with 9–12 hairs. Legs rather long, tarsi of two segments, 2nd joint short. First tarsal joints of all legs with 3 hairs.

Colour : Unknown; probably green, with black siphunculi. Cauda green or yellow (not sclerotic). Legs colour of body or pale brownish-yellowish apices of femora and tibiae darker to brownish-black.

Measurements of one specimen :

Length of body : 2·63 mm.
„ „ ant. : 2·45 „
„ „ siph : 0·61 „
„ „ cau. : 0·49 „

Prop. of ant. segments as : $\frac{100}{\text{III}} : \frac{71}{\text{IV}} : \frac{56}{\text{V}} : \frac{(20 + 114)}{\text{VI}}$

Rhin. on IIIrd ant. segments : 2 and 1.

Al. viv. fem.

General characters as in apterous form. Antennae with about 8 rhinaria on basal half. Siphunculi $\frac{2}{11}$ of length of body, $1\frac{3}{4}$ times length of cauda. Lateral sclerites distinctly developed on abd. segments I–IV. Other characters as in apt. viv. fem.

Colour : Probably with pale brown head and thorax, abdomen with darker marginal spots, remainder as in apterae.

Measurements of one specimen :

Length of body : 2·91 mm.
„ „ ant. : ? „
„ „ siph. : 0·50 „
„ „ cau. : 0·30 „

Prop. of ant. segments as : $\frac{100}{\text{III}} : \frac{83}{\text{IV}} : \frac{65}{\text{V}} : \frac{(25 + ?)}{\text{VI}}$

Rhin. on IIIrd ant. segment : 8 and 8.

Notes : From *Cajanus indicus*, 26.ix.1929, Zomba, Nyasaland (*C. Smee*). This species is allied to *Sitobion avenae*, F. (*granarium*, Kirby), in a morphological sense. The structure of the last rostral segment and the curious short tarsi separate it from *S. avenae*, F., however. Moreover, the species must be more closely allied to *M. nigrinectaria*, Theo., from garden peas, etc., Brit. East Africa.* The proportions of cauda and siphunculi, together with the fact that according to Theobald the siphunculi are nearly one-third of the length of body make it doubtful whether they are the same.

* Theobald, F. V. 1915, *Bull. Ent. Res.*, **6** : 107.

NEUE COLLIURINEN (COLEOPT., CARAB.)

Von Max Liebke.
(*Hamburg.*)

Stenidia pomposa, sp. n.

Kopf und Halsschild schwarz, mit tiefblauem Schein, dieser Schein ist auf dem Kopf schwächer als auf dem Halsschild; Flügeldecken gelbrot mit dunkelblauer Querbinde, der Vorderrand der Binde liegt kurz vor der Mitte, er verläuft genau waagerecht, nur an der Naht weicht er ein wenig aus, der Hinterrand läuft von der Naht aus schräg nach hinten, die Binde berührt sowohl die Naht als auch den Seitenrand und setzt sich über diesen hinaus quer über den Bauch fort, sodass ein vollständiger Ring gebildet ist. Die Mundteile und $3\frac{1}{2}$ Fühlerbasalglieder sind gelbrot, der Rest der Fühler schwärzlich; die Beine sind blassgelb mit schwarzblauen Schenkelspitzen und dunklen Tarsen; die Unterseite von Kopf und Halsschild ist schwarzblau, Mittel- und Hinterbrust, sowie die letzten 3 Hinterleibsringe sind gelbrot.

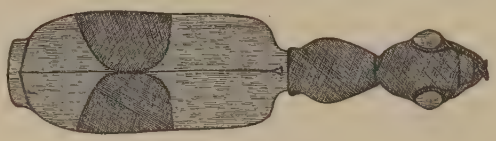


Fig. 1.—*Stenidia pomposa*, sp. n.

Kopf kurzoval, mit grossen, stark gewölbten Augen und mässig langem, leicht gerundet verengtem Hinterkopf, Kopfschild gewölbt, überall mit groben, dichtstehenden Punkten bedeckt, auch die Seiten und die Unterseite sind so punktiert. Auf dem Hinterkopf stehen einige lang abstehende Borsten. Halsschild so lang wie der Kopf, ein wenig schmäler, spindelförmig, nach vorn und hinten leicht verengt, kurz vor den kurz abgerundeten Hinterwinkeln etwas eingeschnürt, Mittellängslinie und Seitenränder sind nicht erkennbar; Oberseite ebenso grob wie der Kopf punktiert, doch stehen die Punkte noch dichter, auf jeder Seite stehen vor der Mitte zwei lange, abstehende Borsten hintereinander. Flügeldecken etwa ein Viertel bis ein Drittel länger als der Vorderkörper, parallel, ungefähr doppelt so lang wie breit, die Schultern sind nur wenig abgeschrägt, die Schulterwinkel kurz abgerundet, die Seiten hinter der Mitte nur äusserst schwach erweitert, zur Spitze etwas verengt und gerade abgestutzt; Hinteraussenwinkel stark abgerundet, Spitzenrand nicht ausgeschweift. Punktstreifen kräftig und gut ausgebildet, bis zur Spitze fast gleichbleibend, ziemlich stark punktiert; Zwischenräume flach und glatt, der 3., 5., 7. und 9. tragen jeder eine Reihe grober, lang abstehende Borsten tragender Punkte. Auch die Schenkel sind abstehend beborstet.

Länge 7 mm.

Es liegen mir 7 Exemplare des Britischen Museums aus Nordwest-Rhodesien vor, von welchen 6 Stück aus Lukanga (*H. C. Dollman*, vi. und vii.1915) und eines aus Kashitu (*H. C. Dollman*, xi.1914) stammen.

Diese prächtige neue Art unterscheidet sich von allen anderen bekannten Arten durch die starke Beborstung der Oberseite und der Schenkel; Während der Kopf bei den anderen Arten keine Borsten auf dem Hinterkopf zeigt, stehen hier einige, der Halsschild trägt dort keine, hier jederseits 2 Borsten vor der Mitte, die Flügeldecken tragen dort etwa 3 bis 5 Borsten auf dem 3. Zwischenraum, hier dagegen eine grössere Anzahl (4 bis 10) auf jedem ungeraden Zwischenraum, mit Ausnahme des ersten. Ein weiterer krasser Unterschied gegen alle anderen Arten besteht in der Zeichnung; um so überraschender ist

die Ähnlichkeit mit *Colliuris fasciata*, Laf., fast gleiche Farbe und Zeichnung, zudem ähnliche Form des Vorderkörpers und gleiche Punktierung desselben, alles zum Verwechseln wie geschaffen, wenn man nicht beide Tiere nebeneinander sieht; dann zeigen sich allerdings die Unterschiede, so die lange parallele Form der Flügeldecken gegen die kurze, breite, an den Seiten erweiterte der *fasciata*, die dunkle Binde läuft hier vollständig um den Körper herum, bei *fasciata* beschränkt sie sich auf die Flügeldecken und ist auch auf diesen noch an der Naht unterbrochen, zu guterletzt sind noch die Schenkelspitzen geschwärzt, bei *fasciata* sind die Beine einfarbig gelbbraun. Der wichtigste Unterschied ist natürlich der generische, der sich im langen Kinnzahn und in der, an der Spitze ausgerandeten Ligula deutlich dartut. Auch die Tarsenform ist deutlich erkennbar, die einzelnen Glieder sind flachgedrückt.

Stenidia angulata, sp. n.

Kopf oben und unten schwarz, Hals, Halsschild oben und unten und Flügeldeckenwurzel mit Schildchen rotgelb, Flügeldecken leuchtend smaragdgrün mit leichtem Metallglanz; Mundteile und drei Fühlerbasalglieder gelbrot, restliche Fühlerglieder schwärzlich; Beine gelbrot, Spitzenhälfte der Schenkel schwarz; Unterseite schwarz.

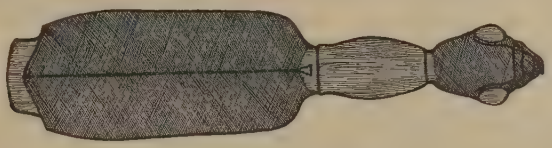


Fig. 2.—*Stenidia angulata*, sp. n.

Kopf langoval, mit mässig grossen, flach gewölbten, wenig vorstehenden Augen und verhältnismässig langem Hinterkopf, Seiten des letzteren leicht gerundet verengt; Ober- und Unterseite sehr dicht und grob punktiert, Die Punktierung bedeckt den ganzen Kopf gleichmässig dicht. Halsschild ein wenig länger als der Kopf, etwas schmäler als dieser, um mehr als die Hälfte länger als breit, spindelförmig, Seiten von der Spitze bis etwas über die Mitte hinaus fast gerade erweitert, sodann geschwungen verengt, die letzte Strecke vor der Basis ist fast parallel, Hinterwinkel kurz abgerundet. Mittellängslinie deutlich eingedrückt, an beiden Enden jedoch verloschen; Oberfläche oben und unten wie beim Kopf sehr dicht und sehr grob, überall gleichmässig dicht punktiert. Flügeldecken ein Drittel länger als der Vorderkörper, mehr als doppelt so lang wie breit, mit nur schwach abgerundeten und abgeschrägten Schultern, fast parallelen Seiten und schräg abgestutzter Spitze, Spitzenrand leicht S-förmig geschwungen, Hinteraussenwinkel deutlich erkennbar, stumpfwinklig, nicht wie bei *spinipennis*, Putz., spitzwinklig. Punktstreifen kräftig und tief eingedrückt, sehr dicht und sehr grob punktiert, die inneren Streifen sind jedoch, im Gegensatz zu den äusseren, hinter dem ersten Drittel der Länge, deutlich flacher eingedrückt und feiner punktiert, die Zwischenräume sind dementsprechend an der Basis und auf den äusseren Zwischenräumen gewölbt, die inneren dagegen auf der Scheibe flach; der dritte trägt 3 Borstenpunkte. Grund quergerunzelt, dadurch die Oberseite matt.

Länge 8,5 mm.

Sieben Exemplare aus Lukanga, N.W. Rhodesia (*H. C. Dollman*, vi.–vii.1915) im Britischen Museum und in meiner Sammlung.

Stenidia viridis, sp. n.

Kopf schwarz, Hals, Halsschild und Schildchen gelbrot, Flügeldecken leuchtend grün Unterseite schwarzbraun mit schwachem Metallglanz, Fühler dunkelbraun mit 3½ gelb-

braunen Basalgliedern, Mundteile bräunlich, Beine gelbbraun mit dunkler Schenkelspitze und Schienen-Basis.

Kopf oval, Augen mittelgross, stark gewölbt und vorstehend, Hinterkopf ziemlich lang, allmählich gerundet verengt, kurz vor dem Hals stärker verengt. Oberseite flach gewölbt, überall gleichmässig dicht grob punktiert, auch die Seiten und die Unterseite. Halsschild tonnenförmig, nur wenig kürzer und wenig schmäler als der Kopf, etwa ein Viertel länger als breit, Seiten stark bauchig erweitert, vor der Basis etwas eingeschnürt. Oberseite wie beim Kopf, dicht und grob punktiert, ebenso die Seiten der Vorderbrust, die Seitenränder

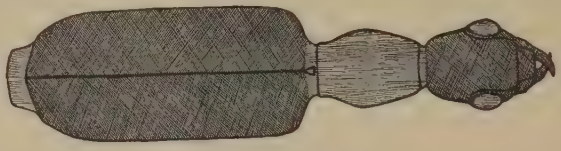


Fig. 3.—*Stenidia viridis*, sp. n.

sind stellenweise schwach erkennbar, zum Teil verloschen, Mittellinie leicht eingedrückt. Flügeldecken etwa ein Fünftel länger als der Vorderkörper, fast doppelt so lang wie breit, fast parallel, Schultern leicht abgeschrägt, Schulterwinkel deutlich, Spitze schräg abgestutzt, Spitzenrand gerade, Aussenwinkel abgerundet. Punktstreifen tief eingedrückt und kräftig punktiert, überall gleichmässig ausgebildet. Zwischenräume flach, dritter mit 4 kräftigen Borstenpunkten.

Länge 7–8 mm.

Mir liegen im Ganzen 13 Stücke aus verschiedenen Landschaften vor, von diesen stammen 6 Stück aus Nord-Rhodesien: 1 Stück aus Lukanga, 1 aus Belala, 2 Stück aus Mwengwa (4.viii.1914) unter diesen die Type, 2 Stück aus Namwala (13.vi.14), alle sind von *H. C. Dollman* erbeutet und befinden sich im Britischen Museum und in meiner Sammlung; 1 Stück, gefangen " n.w. of Lake Chilwa, Nyasaland " (*S. A. Neave*, 12.i.1914), ist ebenfalls im Britischen Museum; 2 Stück aus Salisbury, Mashonaland (*G. A. K. Marshall*, xi.1900) in der Sammlung H. E. Andrewes; 4 Stück aus dem Sudan, darunter eines aus Radjaf (*L. Burgeon*, 30.v.1927), im Belg. Kongo-Museum und in meiner Sammlung.

Von *elegantula*, Pèring., mit welcher die neue Art fast gleiche Flügeldeckenform und -Farbe hat, ist sie getrennt durch den vollständig punktierten Hinterkopf und den breiteren Halsschild. Die 6 Exemplare aus Nord-Rhodesien zeichnen sich vor den übrigen aus durch feurigen, rotgoldenen Metallglanz auf den Flügeldecken, der jedoch nicht so stark wie bei *corrusca*, Laf., ist.

Asios, gen. n.

Labrum quer, vorn doppelt ausgeschweift, Vorderwinkel abgerundet. Mandibeln mässig lang, kräftig, spitz. Palpen normal, Endglieder spindelförmig, kahl, an der Spitze schräg abgestutzt; Kieferntasterendglied so lang wie das vorhergehende Glied. Mentum und Ligula wie bei *Colliuris*, De Geer. Fühler wie bei *Colliuris*. Kopf langoval, mit langem, allmählich verengtem Hinterkopf, Hals dünn, neben dem Augeninnenrande läuft ein scharfer Längskiel. Halsschild lang, flaschenförmig, stielrund, mit gegen Basis und Spitze verloschenem Seitenrand. Flügeldecken länglich, an der Spitze schräg abgestutzt; Punktstreifen vollständig, 3. und 5. Zwischenraum mit Borstenpunkten. Beine kräftig, Tarsenglieder langdreieckig, 4. Glied sehr kurz, fast bis zur Mitte ausgeschnitten, die Glieder 1 bis 4 sind oben in der Mitte scharf längsgekielt.

Von *Colliuris*, De Geer, mit welcher die neue Gattung fast ganz übereinstimmt, unter-

schieden durch die gekielte Tarsenoberseite und durch das tief eingeschnittene 4. Tarsenglied.

Genotype : *A. vindex*, sp. n.

Asios vindex, sp. n.

Pechbraun, mit Ausnahme zweier gelblicher Flecke auf jeder Flügeldecke und den Basalhälften der Schenkel; die Flügeldeckenflecke bestehen aus mehreren kleinen, durch die Punktstreifen getrennte Fleckchen, der vordere derselben, im ersten Drittel der Länge belegen, besteht aus zwei kleinen, auf dem vierten und fünften Zwischenraum gelegenen Fleckchen, der hintere, im zweiten Drittel gelegene, setzt sich aus drei hufeisenförmig angeordneten Längsfleckchen auf dem vierten bis sechsten Zwischenraum zusammen. Die Fühler des einzigen Exemplares sind leider nur bis zum dritten Gliede erhalten, von diesen ist das erste Glied etwas heller gefärbt. Die Unterseite ist etwas heller gefärbt.

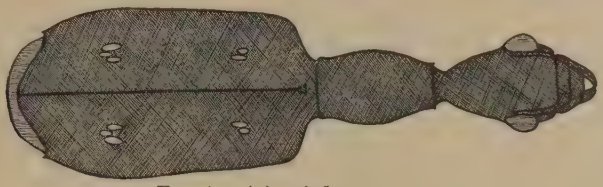


FIG. 4.—*Asios vindex*, sp. n.

Kopf gross, langoval, mit grossen, stark vorstehenden Augen; Mandibeln von mittlerer Länge, kräftig, scharf zugespitzt; Labrum vorn doppelt ausgeschweift; Kieferntaster mit gleichlangem letzten und vorletztem Glied, Stirn von zwei breiten, mässig tiefen, aber scharf begrenzten Längsgruben fast ganz eingenommen, zwischen beiden Gruben zieht sich ein leichter Buckel hin, der jedoch kurz vor dem Scheitel durch zwei schräge Eindrücke jäh unterbrochen wird. Oberfläche fast glatt, nur in den Stirngruben einige Längsrunzeln, übriger Kopfschild fein und verloschen quergerunzelt; Grundrunzelung nicht erkennbar, ebenso auch keine Behaarung. Halsschild etwas kürzer als der Kopf, bedeutend schmäler als dieser; Vorderrand gerade abgestutzt, Vorderwinkel scharf zugespitzt, Seiten dahinter leicht eingeschnitten, sodann rundlich bis hinter der Mitte erweitert, zur Basis wieder leicht verengt; kurz vor den abgestumpften Hinterwinkeln leicht eingeschnürt. Basalrand gerade abgestutzt, Mittellängslinie fein eingedrückt, Seitenrand streckenweise erkennbar; ganze Oberseite leicht quergerunzelt, auf der Scheibe fast glatt, an der Basis jedoch sehr deutlich und grob, Vorderbrust glatt. Seitenrand jederseits mit einigen wenigen Borstenpunkten besetzt, weitere Behaarung nicht erkennbar. Schildchen sehr klein. Flügeldecken so lang wie der Oberkörper, etwas breiter als die halbe Länge, längsviereckig, Schultern leicht abfallend, Winkel deutlich, nur kurz abgerundet, Seiten fast parallel, hinter der Mitte nur leicht erweitert, Spitze schräg abgestutzt, Aussenwinkel zugespitzt, Spitzenrand auf der ausseren Hälfte ausgeschweift, Nahtwinkel kurz abgerundet. Punktstreifen sehr fein, aber tief eingedrückt, bis zur Spitze gleichmässig ausgeprägt, Zwischenräume gewölbt, unpunktiert, im Grunde äusserst fein gerunzelt; der 3. und 5. tragen jeder einige Borstenpunkte.

Länge 12 mm.

Ein Exemplar aus Tharrawaddy, Nieder-Birma (*G. H. Corbett*), in der Sammlung H. E. Andrewes.

Essora, gen. n.

Labrum vorn gerade abgestutzt, Vorderwinkel kurz abgerundet. Mandibeln kräftig, spitz. Palpen schlank, unbehaart; Endglieder spindelförmig, an der Spitze abgerundet, Kieferntasterendglied so lang wie das vorhergehende Glied. Mentum mit spitzem Zahn,

dieser halb so lang wie die Seitenlappen. Ligula an der Spitze verbreitert, gerade abgestutzt; zwei Endborsten; Paraglossen häutig, schmal, kaum länger als die Zunge. Fühler fadenförmig, Länge der Glieder wie bei *Colliuris*, 3½ Basalglieder kahl, erstes Glied an der Spitze mit nur einer langen Borste. Kopf langoval, mit grossen, mässig vorstehenden Augen, Hinterkopf lang, trichterförmig in einen schmalen Hals auslaufend. Neben dem Augeninnenrande befindet sich kein Längskiel. Halsschild flaschenförmig, unvollständig gerandet. Flügeldecken oval, mit abgerundeten Schultern, schräg abgestutzter Spitze Seiten hinter der Mitte erweitert, Punktstreifen fast vollkommen verloschen, zwei Reihen Borsten, sonst keine Behaarung. Beine wie bei *Colliuris*.

Genotype : *E. andrewesi*, sp. n.

Die äussere Form dieser Gattung stimmt ziemlich mit der bei Untergattung *Mimocolliuris* vorherrschenden überein, doch ist der Hinterkopf plumper geformt.

Essora andrewesi, sp. n.

Schwarz, glänzend, auf jeder Flügeldecke sind zwei gelbliche kleine Flecke gelegen, von denen der im vorderen Quereindruck gelegene dunkler gelb ist und auch etwas schräg gelagert ist. Mundteile, Fühlerbasis braun, Schenkelbasis und Schienenmitte gelb.

Kopf lang elliptisch geformt, mit langem, allmählich verengtem Hinterkopf, Augen mässig gewölbt, wenig vorstehend. Stirn doppelt eingedrückt, Kopfschild sonst glatt und unbehaart, nur eine lange Borste jederseits in gleicher Linie mit den beiden Supraorbitalborsten hinter diesen. Halsschild flaschenförmig, an der Spitze am schmalsten, von hier allmählich, leicht gerundet, bis zur breitesten Stelle (etwas hinter der Mitte) erweitert,

Fig. 5.—*Essora andrewesi*, sp. n.

sodann zur Basis wieder etwas verengt, kurz vor dieser etwas eingeschnürt. Mittellinie fein eingedrückt, Seitenränder fast ganz verloschen, Scheibe glatt, Basaldrittel grob quergerunzelt. Seitenrand mit einer Reihe langer, abstehender Borsten besetzt. Flügeldecken länglich, etwas kürzer als der Vorderkörper, mit abgeschrägten Schultern, abgerundeten Schulterwinkeln und schräg abgestutzter Spitze; Spitzenrand aussen leicht ausgeschweift, Aussenwinkel abgerundet; Seiten hinter der Mitte verbreitert. Punktstreifen bis auf ein paar, im vorderen Quereindruck stehende Punkte vollständig verloschen. Der 3. und 5. (volkommen flache) Zwischenraum jeder mit einer Reihe lang abstehender Borsten besetzt. Die ganze Oberseite ist lackglänzend und ohne jede Grundrunzelung.

Länge 8,5–10 mm.

Mir liegen 4 Exemplare aus Franz. Hinterindien vor, die Type, von Phuc-Son, Annam (*H. Fruhstorfer*) in meiner Sammlung, ein weiteres Stück vom gleichen Fundort befindet sich im Museum Dresden, je eines aus Zhadana, Laos (*R. Vitalis de Salvaza* 3.ii.1918) und Hoa Binh, Tonkin (*de Cooman*) in den Sammlungen H. E. Andrewes, London und Ch. Alluaud, Crozant.

Ctenodactyla santarema, sp. n.

Schwarzbraun, Halsschild, Fühler, Beine und Unterseite mit Ausnahme des Kopfes blassgelbbraun.

Kopf fünfeckig, mit grossen, stark vorstehenden Augen, Hinterkopf leicht gerundet verengt, Kopfschild glatt. Halsschild kürzer und bedeutend schmäler als der Kopf, kaum

länger als breit. Vorderrand ausgeschweift, Vorderwinkel rechtwinklig, Seiten vor der Mitte stark erweitert, hinter derselben verengt, vor den rechten Basalwinkeln eine kurze Strecke parallel, stark abgeflacht; Mittellinie deutlich, Scheibe zum grössten Teil fast glatt und unpunktiert, nur an den Rändern ringsum mit einigen groben Punkten besetzt, besonders in den Basalwinkeln, Flügeldecken langgestreckt, flach gewölbt, Schultern leicht abgeschrägt, Schulterwinkel abgerundet, Seiten hinter der Mitte sehr leicht erweitert; Punktstreifen fein punktiert und vollständig, 3. Zwischenraum mit 4, 5. mit 3 Borstenpunkten.

Länge 10 mm.

Zwei Stück aus Santarem, Mittl. Amazonas, im Britischen Museum und in meiner Sammlung.

In Form und Farbe mit *C. chevrolati*, Dej., ziemlich übereinstimmend, doch bedeutend kleiner und schlanker.

Teukrus bifasciatus, Bates.

Von dieser Art fand ich 2 Exemplare aus Nauta, Amazonas in einer Sendung des Brit. Museums. Bates beschrieb die Art aus Peru.

Colliuris, De Geer.

Mimocolliuris, subgen. n.

Kieferntasterendglied länger als das vorhergehende Glied. Labrum vorn doppelt ausgeschweift, Mandibeln mässig lang. Kopf langoval, der sehr lange, trichterförmige Hinterkopf läuft in einen schmalen, stielartigen Hals aus. Oberseite glatt. Halsschild schlank, flaschenförmig. Flügeldecken kurz, kürzer als der Vorderkörper, breit, besonders hinter der Mitte, vorderer Quereindruck kräftig; Punktstreifen bis auf geringe Reste verloschen, Spitzenaussenwinkel abgerundet. Kopf ohne Borsten, Halsschild mit Borstenreihe jederseits, Flügeldecken mit Borstenreihe auf dem 3. und. 5. Zwischenraum, zuweilen auch auf dem ersten.

Type: *C. chaudoiri*, Bohem.
ferner: *C. pilifera*, Nietner.
C. stigma, Andr.
C. pusilla, Andr.
C. sauteri, sp. n.
C. bakeri, sp. n.

Artbestimmungs-tabelle.

1 (6). Oberseite abwechselnd schwarz und rot gefärbt.
2 (5). Kopf ohne den Hals, mittlere Teil des Halsschildes und Spitzenhälfte der Flügeldecken schwarzblau, Hals, Spitze und Basis des Halsschildes und Vorderhälfte der Flügeldecken rot.
3 (4). Flügeldecken nahe der Spitze mit jederseits einem kleinen weisslichen Fleck . . . . . *C. chaudoiri chaudoiri*, Boh.
4 (3). Flügeldecken ohne weissliche Flecke . . . *C. chaudoiri blaisei*, Bedel.
5 (2). Kopf einfarbig schwarzblau, Halsschild einfarbig rot *C. chaudoiri rubricollis*, Bedel.
6 (1). Oberseite einfarbig schwarz, Flügeldecken jederseits mit einem oder zwei kleinen weisslichen Flecken.
7(10). Halsschild verhaltnismässig kurz, nur um die Hälfte länger als breit.
8 (9). Halsschild vor der Basis schwächer eingeschnürt. Oberseite, besonders der Flügeldecken, im Grunde deutlich netzartig gerunzelt; die Schulterwinkel ziemlich scharf vortretend. Länge 6,75–7,3 mm. Ceylon *C. stigma*, Andr.

9 (8). Halsschild vor der Basis viel stärker eingeschnürt. Oberseite vollkommen glatt und glänzend. Die Schulterwinkel sind stärker abgerundet. Länge 7 mm. Philippinen . . . . *C. bakeri*, sp. n.
10 (7). Halsschild bedeutend länger, mindestens doppelt so lang wie breit.
11(14). Halsschild doppelt so lang wie breit; Hals mässig dünn.
12(13). Auf dem ersten Flügeldeckenzwischenraum stehen keine Borsten; Hinteraussenwinkel scharf, nur an der äussersten Spitze abgerundet; es liegt nur ein einziger gelblicher Fleck jederseits vor der Spitze. Länge 7 mm. Formosa . . . . . *C. sauteri*, sp. n.
13(12). Auf dem ersten Flügeldeckenzwischenraum steht, wie auch auf dem dritten und fünften, je eine Reihe lang abstehender Borsten; Hinteraussenwinkel breit abgerundet, im vorderen Schrägeindruck liegt ein ockergelber, schlecht begrenzter Schrägfleck, im letzten Drittel vor der Spitze liegt ein weiterer weissgelber, scharf begrenzter Fleck. Länge 5,5 mm. Sumatra . . . . . *C. pusilla*, Andr.
14(11). Halsschild mehr als doppelt so lang wie breit; der Hals ist ausserordentlich dünn. Flügeldecken mit Borstenreihe auf dem ersten, dritten und fünften Zwischenraum, Jederseits 2 gelbweisse Flecke. Länge 7,5 mm. Ceylon . . . . . *C. pilifera*, Nietn.

Colliuris (Mimocolliuris) bakeri, sp. n.

Schwarz, lackglänzend, Mundteile, Fühler und Beine einfarbig gelbbraun, Flügeldecken auf der Scheibe kurz vor der Spitze mit je einem kleinen, rundlichen weissgelben Fleck.

Der Kopf ist viereckig, der Hinterkopf lang trichterförmig verengt, der Hals ist parallel, doch kürzer als bei *pusilla*, Andr., während die Seiten bis zum Halsansatz hier länger sind; die Augen sind gross, stark gewölbt und vorstehend; der Kopfschild ist glatt und kahl, bei einem Stücke zeigt sich auf dem Hinterkopf etwas nach rechts eine quergerunzelte Fläche, doch scheint es sich hier wohl um eine Ausnahme zu handeln. Der Halsschild ist bedeutend kürzer als der Kopf, nur ungefähr die Hälfte länger (30 × 48), als breit, die Form desselben

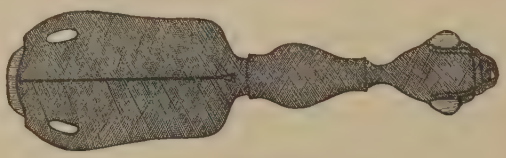


Fig. 6.—*Colliuris* (*Mimocolliuris*) *bakeri*, sp. n.

ist ganz wie bei *stigma*, Andr., doch ist die Einschnürung vor der Basis stärker. Die Mittellinie ist deutlich, ebenso die Seitenränder, doch sind letztere an der Basis verloschen. Die Oberfläche ist vollkommen glatt und kahl, nur an der Basis und an der Spitze sind ein paar grobe Querrunzeln; die Vorderbrust ist glatt. Die Seitenränder sind mit je einer lockeren Reihe lang abstehender Borsten besetzt. Die Flügeldecken sind etwas kürzer als der Vorderkörper, um die Hälfte länger als breit, die Schultern sind abgeschrägt, die Schulterwinkel abgerundet, die Seiten sind hinter der Mitte stark erweitert, die Spitze ist leicht schräg abgestutzt, der Hinteraussenwinkel stumpfwinklig. Die Punktstreifen sind zum grössten Teil verloschen, nur in dem im ersten Drittel gelegenen Schrägeindruck liegen einige wenige Punkte; die Zwischenräume sind vollkommen flach und im Grunde glatt, der 1., 3. und 5. tragen jeder eine Reihe langer, abstehender Borsten. Auch die Schenkel sind abstehend beborstet.

Länge 7 mm.

Zwei Stücke aus Surigao, Mindanao, Philippinen (*Prof. Fuller Baker*) in der Sammlung H. E. Andrewes, London, und in meiner Sammlung.

Diese kleine prächtige Art benenne ich nach ihrem Entdecker, dem bekannten Sammler Prof. Fuller Baker, sie ist mit *stigma*, Andr., formverwandt, doch gut unterschieden durch stärkere Einschnürung des Halsschildes vor der Basis und durch die glatte, lackglänzende Oberseite; von den übrigen Arten unterscheidet sie der verhältnismässig kurze und breite Halsschild.

Panapiodera, subgen. n.

Kieferntasterendglied länger als das vorhergehende Glied. Kopf länglich, mit langem, trichterförmigem, allmählich in den Hals auslaufendem Hinterkopf; Kopfschild glatt und unpunktiert. Halsschild schlank flaschenförmig, doppelt so lang wie breit. Kopf und Halsschild unbehaart. Flügeldecken mässig lang, an der Spitze nicht dornig ausgezogen; Punktstreifen vollständig, dritter Zwischenraum mit drei Borstenpunkten. Ganze Oberseite mattglänzend.

Type: *C. subnitida*, sp. n.

Colliuris (Panapiodera) subnitida, sp. n.

Schwarz, Mundteile, Fühlerbasalglieder (mehr als 2 Basalglieder sind an keinem der beiden typischen Stücke erhalten), ein dreieckiger Fleck und der Spitzenrand der Flügeldecken sowie die Beine mit Ausnahme der dunkleren Knien gelbbraun.

Kopf gross, mit grossen, gewölbten und stark vorstehenden Augen und ziemlich langem, trichterförmig geradlinig verengtem Hinterkopf, auf der Stirn liegen ausser den beiden üblichen tiefen Längseindrücken ein paar Unebenheiten, auf dem Scheitel liegen einige wenige mittelgrosse tiefe Punkte, sie liegen vom Augenvorderrand bis zur Mitte verstreut und zählen höchstens 10–12 Stück im ganzen, die restliche Oberfläche ist vollständig glatt und glänzend, ohne Grundrunzelung. Halsschild etwas kürzer als der Kopf, viel schmäler als dieser, etwa die Hälfte länger als breit, flaschenförmig, etwas hinter der Mitte am breitesten, von dort zur Spitze stark, zur Basis ein wenig verengt, kurz vor der Basis sind die Seiten leicht eingeschnürt; Vorderwinkel rechtwinklig, Hinterwinkel abgerundet.

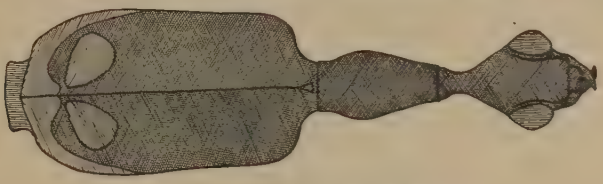


Fig. 7.—*Colliuris* (*Panapiodera*) *subnitida*, sp. n.

Mittellängslinie nur schwach eingedrückt, aber deutlich erkennbar, Seitenränder fast ganz verloschen; Oberseite quergerillt, dazwischen im Basaldrittel und an den Seiten grob und dicht punktiert, diese Punktierung erstreckt sich auch auf die Seiten der Vorderbrust; im Grunde ist keine Runzelung wahrnehmbar. Am Seitenrand steht nur eine einzige Borste jederseits kurz vor der Mitte. Flügeldecken etwa so lang wie der Vorderkörper, längsviereckig, mit geraden Schultern und gut betonten Schulterwinkeln, Seiten im ersten Drittel parallel, sodann etwas erweitert, zur Spitze wieder verengt, Spitze schräg abgestutzt. Hinteraussenwinkel breit abgerundet; Punktstreifen mittelgrob punktiert, Punkte auf der Spitzenhälfte vollständig verloschen, nur die Streifen bleiben sehr fein erkennbar, die vollkommen flachen Zwischenräume im Grunde fein netzmaschig gerunzelt, dritter mit 3 Borstenpunkten besetzt.

Länge 6 mm.

Zwei Stück aus Xinavane, Portug. Ost-Afrika (*C. B. Hardenberg*), xi.1920 im Imperial Institute of Entomology, London, und in meiner Sammlung.

Subgen. *Odacanthina*, Lbk.

Colliuris (Odacanthina) academica, sp. n.

Schwarz mit grünmessingfarbigem Erz-glanz, Flügeldecken jederseits mit einem zusammengesetzten gelben Querfleck, derselbe reicht vom 4. Zwischenraum bis zum neunten, schräg zur Schulter, diese aber nicht erreichend, der Seitenrand wird ebenfalls nicht erreicht. Die Fühler haben das Basalglied dunkelbraun, das 2., 3. und 4. Glied gelbbraun, das 5., 6. und 7. schwarzbraun, die restlichen Glieder sind gelblichweiss. Die Beine sind gelbbraun mit blassgelber Schenkelbasalhälfte und Schienenmitte.

Der Kopf ist langgestreckt, mit grossen, starkgewölbten und stark vorstehenden Augen, der gestreckte Hinterkopf hat die Form eines Siebes, seine Seiten verlaufen gerade, er ist ebenso lang wie der Kopf vom Augenvorderrand bis zur Mandibelspitze. Die Oberseite ist glatt und unpunktiert. Der Halsschild ist so lang wie der Kopf, kegelförmig, die Seiten hinter der Mitte leicht gerundet erweitert, kurz vor den Hinterwinkeln eingeschnürt. Die Mittellängslinie ist undeutlich; Die Oberseite in ihrer ganzen Ausdehnung deutlich quergerillt, unpunktiert. Kopf und Halsschild tragen weder auf der Scheibe noch am Seitenrand Borsten. Die Flügeldecken sind längsviereckig, etwas länger als der Vorderkörper, mit leicht abgeschrägten Schultern, deutlichen, kurz abgerundeten Schulterwinkeln. Die Seiten sind hinter der Mitte leicht gerundet erweitert, an der Spitze S-förmig geschwungen abgestutzt. Der Hinteraussenwinkel ist kurz zugespitzt, der Nahtwinkel einfach. Die Punktstreifen sind tief eingedruckt und überall deutlich, die Punkte derselben sind auf der Basalhälfte sehr kräftig, zur Mitte schwächer werden, die gewölbten Zwischenräume sind glatt und unpunktiert, die ungeraden tragen Borstenpunkte, der 1. auf der Basalhälfte etwa 3–5, der dritte auf der ganzen Länge 10–12, der fünfte 8–9, der siebente keinen Borstenpunkt und der neunte die üblichen grossen Augenpunkte. Der 7. und 8. Zwischenraum tragen nahe der Spitze eine Längsschwiele.

Länge 8 mm.

Zwei Stück, bezettelt: Essequibo R., Moraballi Creek, Brit. Guiana (30.viii.1929, Oxford University Exped.) im Brit. Museum.

Artbestimmungs-tabelle.

1(4). Flügeldecken kürzer; Halsschild auf dem grössten Teil der Oberseite glatt oder fast glatt. Flügeldecken schwarz mit jederseits zwei helleren Flecken, ohne deutlichen Metallglanz.

2(3). Punktstreifen der Flügeldecken vollständig bis zur Spitze, vor derselben stellenweise schwächer. Panama: Unterer Amazonas . *lineolata*, Bates

3(2). Punktstreifen fast gänzlich verloschen, nur im Quereindruck vor der Mitte sind einige grobe Punkte vorhanden. Kuba . . . . *canoae*, sp. n.

4(1). Flügeldecken länger; Halsschild überall gleichmässig deutlich quergerillt. Flügeldecken schwarz, mit deutlichem blauen oder erzfarbigem Metallschein.

5(6). Flügeldecken einfarbig, ohne gelbe Flecke, mit starkem blauem Metallschein. Mittl. Amazonas. . . . . *cyanea*, Lbk.

6(5). Flügeldecken mit einem zusammengesetzten schrägen gelben Querfleck, mit Messingerzglanz. Brit. Guyana . . . . . *academica*, sp. n.

NEUE ALTWELTLICHE LIMACODIDAE (LEP.)

Von Dr. Martin Hering.

(*Zoologisches Staatsmuseum, Berlin.*)

Seit meiner Bearbeitung der Familie in den entsprechenden Bänden des Seitz'chen Werkes sind mir eine Anzahl von Angehörigen der Familie zugegangen, die sich als neue Arten bezw. Gattungen erwiesen haben, und die nachfolgend beschrieben werden sollen. Ich spreche den Herren Dr. K. Jordan (Tring Museum), Sir Guy Marshall (Imperial Institute of Entomology) und Mr. W. H. T. Tams (British Museum) für liebenswürdige Uebersendung von Material auch an dieser Stelle meinen verbindlichsten Dank aus.

Afrikanische Arten.

Paryphantina, gen. n.

Nahestehend *Paryphanta*, aber Ader 11 im Vorderflügel stark gebogen, die Beine dicker beschuppt. Fühler beim Weibchen einfach, Hinterschienen mit 2 Spornpaaren. Palpen grade vorgestreckt, $1\frac{1}{2}$ mal so lang wie ein Augendurchmesser, die Stirn beträchtlich überragend. Im Vorderflügel Ader 2–5 in etwa gleichem Abstand um die Hinterecke der Zelle, 6 aus der Mitte der Mittelzelle, 7 etwas getrennt von dem mit 10 gestieltem Stiel 8 + 9. Ader 11 entspringt sehr weiter basalwärts als Ader 2. Im Hinterflügel die Zellhinterecke sehr weit vorspringend gegen den Saum, Ader 3 und 4 entspringen einander näher als jede derselben von 2 bezw. 5. 6 + 7 sind lang gestielt. Ader 8 ist bei $\frac{2}{5}$ des Zellvorderrandes mit diesem durch eine lange Querader verbunden.

Generotypus: *P. argentifera*, sp. n.

Paryphantina argentifera, sp. n.

Körper und Hinterflügel holzbraun. Vorderflügel rotbraun, etwas violett getönt, am Innenrande gelblich holzbraun werdend, mit schmaler silberner Mittelquerlinie, die über die Querader geht und ganz schwach nach innen gebogen ist, den Innenrand nicht ganz erreichend. Vorderflügellänge 12 mm.

2 ♀ von Madagaskar, Antanambé, Baie d'Antongil, 3.iv.97 (*Mocquerys*), Tring Museum.

Brachiopsis, gen. n.

Hinterschienen mit zwei Paar langer Sporne, Fühler beim Männchen doppelt gekämmt, Kammzähne gegen die Spitze immer kürzer werdend. Palpen mehr als doppelt so lang wie der Durchmesser eines Auges, aufgebogen, anliegend beschuppt, Endglied stumpf, $\frac{1}{2}$ so lang wie das vorletzte. Im Vorderflügel entspringt Ader 2 gegenüber der graden Ader 11, 3–5 in etwa gleichem Abstande um die hintere Zellecke, 6 etwas oberhalb des Queraderwinkels, 7 mit den sehr lang gestielten Adern 8 + 9 kurz gestielt, 10 mit diesem Stiel aus einem Punkte. Im Hinterflügel die Zellhinterecke stark vorspringend, 3 und 4 näher entspringend als 4 und 5. Adern 6 + 7 kurz gestielt, 8 etwas hinter der Mitte des Zellvorderrandes mit diesem durch eine schräge Querader verbunden.

Generotype: *B. conjunctoides*, sp. n.

Brachiopsis conjunctoides, sp. n.

Erinnert im Habitus etwas an die indische *Iragoides conjuncta*, Wlk., ist aber vie kleiner. Vorderflügel violettbraun, mit einigen grausilbernen Schuppen untermischt. Im

Wurzelfeld und um das Zellende stellenweise schwärzliche Verdunkelung. Charakteristisch für die Art ist eine schwärzliche Querlinie, die am Apex vor dessen Spitze beginnt, dann gleich etwas nach aussen umbiegt und nun, unregelmässig gewellt, mit dem Saum divergierend zum Innenrand vor dem Tornus geht; sie ist in der Flügelmitte gegabelt, der Gabelast geht zum Saum zwischen Ader 3 und 4. Zwischen den beiden Gabelästen ist der Raum durch einen auffallend kupferbraunen Fleck ausgefüllt. Hinterflügel dunkelgrau, Unterseite grau. Körper dunkel violettbraun, mit grausilbernen Schuppen untermischt, Hinterleib auf den ersten 3 Segmenten mit je einem hell kupferfarbenen aufrechtstehendem Haarbüschel. Ventralseite des Hinterleibs in der Mitte trübweiss. Hinterschienen und -Tarsen ockergelb behaart, Mittelschienen mit abstehenden Büscheln breiter grausilberner Schuppen. Vorderflügel 8 mm. lang.

♂-Type von S. Kamerun, Lolodorf (Staatsmuseum, Berlin), ♂-Paratype von Sierra Leone, Njala (*E. Hargreaves*), 1.iv.32 (Imperial Institute of Entomology, London).

Parasa irrationalis, sp. n.

Erinnert im Habitus an südamerikanische Arten der Gattung. Körper dunkel schokoladenbraun, Thorax oben aber grün. Vorderflügel grün, Zeichnungen violettbraun: Vorderrand schmal dunkel, das dunkle Wurzelfeld sehr klein, etwa wie bei *P. cucumenica*, Dyar, gestaltet, aber vom Vorderrand gegen den Innenrand schräg nach aussen gerichtet, mit vorspringendem kleinen Zahn am Hinterrand der Zelle. Saumband schmal und gleichmässig dunkel, 1 mm breit, nur über dem Innenrande etwas erweitert. Hinterflügel dunkel violettbraun, so auch die Unterseite. Vorderflügel-länge 10 mm.

♂-Type von British Ost-Afrika, Kikuyu, 28.iii.02 (Staatsmuseum, Berlin).

Parasa viridissima, Holl., und *P. satura*, Karsch.

Nach dem Vorgehen von Karsch hatte ich die letztere Art bisher als ein Synonym zu der ersteren angesehen; Herr Sir Guy Marshall machte mich aber darauf aufmerksam, dass sich die beiden Formen in den Raupen wesentlich unterscheiden, so dass hier zwei verschiedene Arten angenommen werden müssen, die allerdings nicht schwer voneinander zu trennen sind, wenn sie auch in der Gestalt ihrer Zeichnungen weitgehend übereinstimmen.

P. viridissima, Holl., hat hellbraunes Wurzelfeld und solches Saumband, letzteres deutlich abgehoben.

P. satura, Karsch hat dunkel violettbraunes Wurzelfeld und nicht so deutlich abgehobenes Saumband, letzteres oft grünlich übergossen.

Niphadolepis lampra, sp. n.

Glänzend milch-weiss. Vorderflügel am Saum an der Spitze und über dem Innenwinkel schmal dunkelbraun, Fransen goldbraun. Aeussere Querlinie dunkelgrau, erst stark nach aussen gebogen, dann stark nach der Wurzel zu gebogen, der letztere Bogen wird fast ausgefüllt durch einen schwärzlichen Halbmondfleck. Der obere Bogen zeigt auf einen am Saum liegenden runden schwärzlichen Fleck; ein ähnlicher, mehr undeutlicher, liegt am Saum über dem Innenwinkel. Auf der Mitte des Innenrandes schwärzliche Bestäubung. Hinterflügel mit grauen Fransen und mit einem bis zur Zelle reichenden grossen graubraunen, fast rundem Fleck am Saum, der gegen den Innenwinkel zu verlöscht. Unterseite weiss, mit gelbbrauner Saumlinie und gelbgrauen Fransen. Vorderrandhälfte der Vorderflügel, ausgenommen am Apex, und ein Fleck am Zellende dunkelgrau. Vorderflügellänge 8 mm.

♂-Type von Goldküste, Takwa (*R. E. James*) (Tring Museum).

Niphadolepis seleniphora, sp. n.

Vorderflügel bräunlich olivfarben, nahe der Basis mit schwärzlicher, undeutlicher, aussen stellenweise weiss gerandeter Querlinie. Eine weitere schwarze, nach aussen gezackte Querlinie geht von $\frac{2}{3}$ des Vorderrandes, unterhalb der Zelle stark wurzelwärts einspringend, etwa nach der Mitte des Innenrandes. Sie ist an der Wurzelseite stellenweise weiss gerandet, namentlich fallen auf 3 weisse Flecke, einer unter dem Vorderrand, einer am Zellende und einer zwischen Zellhinterrand und an.-Ader. Diese Linie kann unterbrochen und nur auf die Umgebung der genannten Flecke beschränkt sein. Eine weitere schwärzliche Querlinie beginnt bei $\frac{3}{4}$ des Vorderrandes, springt dann nach aussen in zwei Zacken vor, ist auf der an.-Ader wurzelwärts eingebogen und springt gleich danach in einem spitzen Zahn saumwärts vor. Sie ist saumwärts weiss angelegt. Der Saum ist mit schwarzen Mondflecken besetzt, ein grosser rotbrauner Halbmondfleck nimmt die ganze untere Hälfte des Randfeldes bis zum Tornus ein. Er ist wurzelwärts breit, die schwarzen Saumflecke schmaler weiss gerandet. Der Raum zwischen den beiden vorher genannten schwarzen Zackenlinien ist etwas heller braun. Fransen mit rotbrauner Basallinie, am Ende schwärzlich und zuletzt wieder heller. Hinterflügel schwarzgrau, Fransen wie im Vorderflügel. Unterseite grau, mit weisslichen Randflecken. Körper wie die Vorderflügel, diese 9 mm. lang.

2 ♀ von Sierra Leone (*E. Hargreaves*), 21.vi.–7.vii.32 (Imperial Institute of Entomology, London).

Trachyptena nigromaculata subsp. **magna,** subsp. n.

Diese neue Unterart unterscheidet sich von der Nominatunterart von Südkamerum durch beträchtlichere Grösse, weniger dichte schwarze Bestäubung der Vorderflügel und dadurch, dass die Oberseite des Thorax mit den Vorderflügeln gleichfarbig ist. Bei der Nominatunterart ist die Oberseite des Thorax rotbraun wie Hinterleib und Hinterflügel, bei subsp. *magna* weissgrau wie die Vorderflügel. Die letzteren sind nur mit ganz spärlichen schwarzen Schuppen bestreut, namentlich ist auch der dicke schwarze Fleck an der Querader bei der neuen Unterart nur klein punktartig oder dünn strichförmig. Der Apex der Hinterflügel ist etwas mehr gerundet wie bei der Nominatunterart. Vorderflügellänge 9–10 mm., gegen 7 mm. bei der Nominatunterart.

3 ♂ von Sierra Leone (*E. Hargreaves*), 17.–29.viii.30 (Imperial Institute of Entomology, London).

Indomalayische Arten.

Scopelodes anthela malaccana, subsp. n.

Diese kontinentale Unterart ist von der malayischen durch bedeutendere Grösse unterschieden; die Mittellinie der Hinterleibunterseite ist nicht weiss, sondern hellgelb. Vorderflügellänge 24 mm.

♂-Type von Tengah-Gebirge (Staatsmuseum, Berlin), 2 ♂ von Tras, Pahang (Wiener Museum), 2 ♂ von Singapore (Hamburger Staatsmuseum).

Thosea mediostrigata, sp. n.

Von den andern Arten der Gattung sogleich durch die fast in der Mitte des Vorderflügels liegende Querlinie unterschieden. Einfarbig graubraun, mit einer fast graden schrägen Querlinie, die dunkelbraun ist, von $\frac{2}{3}$ des Vorderrandes nach $\frac{1}{3}$ des Innenrandes gehend, saumwärts unscharf begrenzt. Sie geht nur wenig saumwärts von der Zelle

entfernt an dieser vorbei. Hinterflügel und Unterseite grau, die der letzteren weisslichgrau getönt. Die Wurzelhälfte der Vorderflügeloberseite erscheint etwas heller als die Saumhälfte, mit schwach rosavioletter Tönung. Ader 10 im Vorderflügel ist vom Stiel 7–9 deutlich getrennt, 7 ist mit 8 + 9 kurz gestielt. Vorderflügellänge 17 mm.

♀-Type von Malay Peninsula, Kuala Lumpur, 21.iv.32 (Imperial Institute of Entomology). Die Art wurde erzogen von *Cinnamomum zeylanicum.*

Thosea bipartita, sp. n.

Die Art steht am nächsten *T. loesa,* Moore, unterscheidet sich durch die viel geringere Grösse und besonders dadurch, dass die Querlinie in eine helle innere und eine dunkle äussere geteilt ist. Körper und Flügel grau, der Scheitel und der Vorderteil des Thorax etwas heller ockrig getönt. Vorderflügel mit feinem dunklen Punkt am Zellende, ein ganz grader dunkler Streifen geht von $\frac{7}{10}$ des Vorderrandes nach $\frac{2}{3}$ des Innenrandes. Er ist an der Wurzelseite von einer ebenso schmalen weisslichen Linie begleitet, aussen ist er unscharf begrenzt und geht unmerklich in das Saumfeld über. Im Vorderflügel entspringt Ader 10 aus einem Punkt mit dem Stiel 7–9. Vorderflügellänge 10 mm.

♂-Type von Siam (*W. R. S. Ladell*), im Imperial Institute of Entomology, London.

TWO NEW SPECIES OF *TRYPOXYLON* (HYMENOPTERA, SPHECOIDEA)

By O. W. Richards, M.A., F.R.E.S.

The following species of *Trypoxylon* are in the collection of the British Museum. The Indian species is aberrant and appears to form a group without close allies. The African species is one of a number of allied undescribed species in the Museum collection.

T. mandibulatum, sp. n.

Group characters. Dorsal edge of orifice of propodeum a little downcurved but not much flattened. Costa produced beyond the radial cell in the fore-wings. Abdominal sternites pubescent. Vertex without a system of keels above the antennae. Lateral lobes of the postnotum not raised into a high lamella. Pleural suture not developed. Hind coxa of female without a ventral organ. Mandible of female broad and bidentate. Male with only twelve antennal segments.

♀. Black, antennae beneath, mandibles and palpi, tegulae, a very narrow base and apex to fore femora, fore tibiae and tarsi, very narrow apex of mid femora, mid tibiae and tarsi, basal quarter of mid tibiae, basal half of hind basitarsus, and annulations of other hind tarsal segments, pale testaceous. Wings hyaline. Pubescence silvery, not very dense. Length 6·5 mm.

Occiput subquadrate, behind ocelli moderately shining. Eyes distinctly closer at clypeus than on occiput where separated by a distance equal to length of antennal segments 3 + 4 + 5 + 6. Ocelli separated by less than one-quarter their diameter from eyes, by one and two-thirds their diameter from one another. Inner margin of eyes behind the emargination subparallel, vertex a little raised, dull, alutaceous, with very fine close punctures. Supra-antennal keels and limiting keels of antennal scrobes not developed. Antennal sockets with their margins not raised, separated by half their diameter. Antennae clavate, scape nearly twice as long as greatest width, 2 subspherical, 3 much narrower,

about one and a half times as long as broad in middle, about as long as 5, 4 quadrate, 6 a little longer than broad, 7–11 quadrate, 12 one and a half times as long as broad, tapering. Clypeus with appressed pubescence and few outstanding bristles, apical margin straight, a little callose with apical quarter somewhat produced, clypeus three-quarters as high as least width between eyes. Mandibles broad, with a big lower tooth and a small one above it. Occipital keel strong, complete, horizontal space behind buccal cavity narrow, as wide as width of fore basitarsus. Tempora beneath shining, finely and closely punctured. Stipes of maxillae shining, finely punctured. Proepisternum with no keel, tubercle a little prominent. Pronotum with lateral tubercle elongate, edge just sharp, angles of collar rounded. Mesopleuron moderately shining, closely and finely punctured, prepectus defined by a crenate furrow, crossed only by a ventral, transverse keel. Mesonotum dull, closely and rather finely punctured, finely alutaceous, scutellum similar but more sparsely punctured, flat. Metanotum flat, finely punctured. Lateral lobes with posterior margin not hyaline, depressions rather shallow. Metapleuron separated from propodeum by a strongly crenate furrow, metapleural keel nearly straight, area below it not defined. Metasternum not emarginate. Propodeum with dorsal area weakly defined by a U-shaped furrow, flat, moderately shining, with irregular clathrate sculpture. Posterior surface little separated from dorsal, with a shallow furrow not extending as far as the orifice, no keeled depression but a central keel in its position, angles not keeled, coarsely and irregularly striate. Sides well-defined above, finely striate, punctate on upper third, antero-ventrally with striae obsolete. First abdominal tergite with a furrow to a little beyond the spiracles, spiracular area quadrate, apophyses obsolete, tergite at base as wide as length of hind trochanter, hardly wider at apex, as long as hind femur + trochanter. Second tergite two-thirds as long as first, nearly three times as long as apical width. First tergite little, second very little contracted at base. Sixth tergite not keeled. Base of sternites 2–3 completely hidden by the strongly deflexed tergites, visible parts of sternites 2–5 pubescent.

♂. Length 5·5 mm. Antennae with only twelve segments, scape twice as long as broad in middle, 2 broad and globular, 3 much narrower but only a little longer than broad, as long as 5, 4 quadrate, remaining segments all about quadrate, after 7 becoming very thick, 12 one and a half times as long as broad. Mandibles simple. Abdominal tergites and sternites simple.

Type ♀, Ceylon: Colombo, Fletcher coll. Allotype. ♂, Bengal: Pusa, 29.iv.09 (*G. R. Dutt*). I believe that the male and female belong to the same species, although the two localities are so far apart.

T. carpenteri, sp. n.

Group characters. Dorsal edge of orifice of propodeum quite strongly projecting but actual edge a little downcurved. Costa a little produced beyond the radial cell in the fore-wings. Abdominal sternites pubescent. Vertex in the present species with only a transverse keel above the antennae, but in some of its allies with short keels diverging posteriorly, approaching the condition found in the allies of *T. scutatum*, Chevr. Lateral lobes of the postnotum black, only a little raised and only in anterior half. Pleural suture not developed. Hind coxa of female with no ventral organ, in both sexes with the inner dorsal keel raised into a strong triangular tooth. Mandibles simple.

♂. Black, tibial spurs and tegulae a little paler. Wings subhyaline, a little darkened at apex. Pubescence all silvery, long but dense only on face. Length 14 mm.

Occiput shining, moderately closely punctured. Eyes equally separated at clypeus and on occiput where separated by a distance equal to length of antennal segments 2 + 3. Ocelli separated by two-thirds their diameter from eyes, by three-quarters from one another. Vertex dull, densely alutaceous, with fine sparse punctures, central impression distinct. Supra-antennal keel very little raised. Limiting keels of antennal scrobes together forming

a sharp, biarcuate keel joining tops of sockets. Antennal sockets separated by two-thirds their diameter, the upper edge distinctly raised and bent down. Antennae with scape one and a half times as long as width in middle, 3 four times as long as broad, distinctly shorter than 4 + 5, 4 a little longer than 5 which is about two and a third times as long as broad, remaining segments progressively shorter till 12 is about one and a third times as long as broad, 13 twice as long as broad, shorter than 11 + 12, flagellar segments 6–9 distinctly serrate beneath, especially 7. Clypeus with fairly dense, suberect pubescence, clypeus in centre three-quarters as long as least width between the eyes, apical margin rounded, a little produced over central third into a subrectangular lobe five times as wide as long. Occipital keel nearly complete, rather strong, horizontal space behind the buccal cavity rather depressed, broad, about as wide as half the length of third antennal segment. Tempora beneath smooth and shining, finely and closely punctured. Stipes of maxillae with a raised inner margin which is weakly crenulate, otherwise smooth and shining. Proepisternum with no keel but tubercles strongly prominent. Pronotum with collar slightly prominent in centre, angles rather prominent, not bordered, lateral tubercles weak and rounded. Mesopleuron strongly and sparsely punctured below, becoming more and finely and still more sparsely punctured above, prepectus crossed only by a transverse ventral keel. Mesonotum shining, very faintly alutaceous, rather strongly and sparsely punctured. Scutellum flat, more finely and closely punctured than mesonotum. Metanotum flat, finely punctured, lateral lobes striate, posterior margin not hyaline, depressions large and deep. Metapleuron separated from propodeum by a strong, non-crenulate furrow, metapleural keel somewhat curved, area beneath it not defined. Metasternum produced posteriorly into a squarish lobe which is very slightly emarginate. Propodeum with dorsal surface rather well-defined by a U-shaped furrow, smooth and shining, with regular keels which are diagonal at base and transverse at apex. Posterior surface with a deep furrow, broadest above where well-defined, crossed in its lower half by three keels, keeled depression one and a half times as broad as high, large but ill-defined, angles without keels, shining, with coarse, irregular striae. Sides shining, finely and moderately closely punctured, not sharply defined above, with a distinct keel curving up in front of hind coxae. First abdominal tergite with a short furrow, spiracular area twice as long as broad, apophyses rounded but strong, tergite at base (posteriorly to apophyses) two-thirds as wide as length of hind trochanter, five times as wide at apex, basal two-thirds being narrow and parallel-sided. Second tergite hardly more than one-third as long as first, one and a quarter times as long as wide at apex. First and second tergites strongly contracted at apex. Seventh tergite simple. Sternites pubescent. Hind coxa with the inner dorsal keel produced into a strong, lamelliform tooth near base. All femora with long pubescence.

♀. Wings evenly pale fuscous. Length 13·5 mm. Antennae with scape one and a half times as long as width in middle, 3 four and a half times as long as broad, shorter than 4 + 5, 4 a little longer than 5 which is two and a third times longer than broad, remaining segments all at least twice as long as broad, 12 a little longer than 11. Ocelli separated by one-third their diameter from eyes, by two-thirds their diameter from one another. Clypeus rather strongly produced in a regular curve, central length a little longer than least width between the eyes. Sides of propodeum very finely punctured. First abdominal tergite with spiracular area three times as long as broad, whole tergite with basal part longer and narrower and apical part rather less expanded. Sixth tergite keeled.

Type ♂, paratype ♂, and allotype ♀, Uganda: Lake Victoria, Nkosi Is., S. Sesse, 25–27.v. 28 (*G. D. H. Carpenter*).

Some of the terms used in the above descriptions will be defined in a forthcoming paper on the American species of the genus.

NEUE LUCANIDEN (COL.) DES BRITISCHEN MUSEUMS UND EINIGE ANDERE

Von P. Nagel.

(*Hanover.*)

1. *Lamprima coerulea*, Donovan.

In meiner Arbeit über das Genus *Lamprima* (1930, *Stettin. Ent. Ztg.*, **91** : 86) habe ich diese Art nicht erwähnt, weil sie in allen Catalogen als synonym zu *L. latreillei*, Macleay, gesetzt ist, und weil auch Boileau sie nicht ausdrücklich in seiner Arbeit über die Lucaniden des Britischen Museums und der Universität Oxford (*Trans. Ent. Soc. Lond.*, **1913**) als eine gute Art bezeichnet hat. Nun veröffentlicht Dr. R. Didier in Paris (*Etudes sur les Coléoptères Lucanides du Globe*, Paris, 1931, XVI, fasc. 9) eine Arbeit über diese Art und nennt darin als Hauptunterschiede von *L. latreillei*, der *coerulea* sehr ähnlich ist, die Zähnung des Mandibelendes. Es ist dies nämlich auch die Meinung Boileau's in seiner eben genannten Arbeit, worin er auch eine genauere Beschreibung dieser Zähnung gibt. Ich muss aber zwischen der Beschreibung Didier's und der ihr beigegebenen wundervollen farbigen Figur von der Hand Planet's einen Widerspruch feststellen, denn die Figur zeigt die Spitze der *rechten* Mandibel—nicht der linken, wie es in der Beschreibung heisst mit 2 Zähnchen zwischen der Spitze und dem Zahne auf der Unterseite besetzt. Ich bin Herrn Professor Poulton vom Hope Department des Oxford Museum's sehr zu Danke verpflichtet, dass er mir gegen andere neue und seltene Lucaniden, die in Oxford noch nicht vertreten waren, 2 Stück der in der Westwood'schen Sammlung vorhandenen 8 *coerulea* abgetreten hat. Eine sehr eingehende Untersuchung hat nun ergeben, dass die beiden erhaltenen Stücke genau die gleiche Zähnung des Mandibelendes aufweisen, als *L. latreillei* und *L. aurata*, Latr. Es sind nur in der Farbe, die bei *coerulea* blau ist, und in der Punktierung des Prothorax sowie der Decken Unterschiede vorhanden. Die Punktierung steht in der Mitte zwischen den beiden genannten Arten, d.h. sie ist stärker, als bei *latreillei*, aber nicht so stark, als bei *aurata*. Die Flügeldecken zeigen einige schwache Risse, wie sie auch bei *aurata* und besonders bei *aenea*, Fabr., vorhanden sind. Der Mesosternalfortsatz ist nicht scharf und nach vorne gerichtet, wie bei *latreillei*, sondern er ist mehr stumpf und genau nach unten gerichtet, wie bei *aurata*. Die Zähnung der Vordertibien weist keine Unterschiede gegen die genannten Arten auf, doch zeigt die Form des Mesosternalfortsatzes, dass *coerulea* näher bei *aurata* steht.

Zu der blauen Färbung möchte ich noch bemerken, dass wahrscheinlich auch bei den grünen *Lamprima*-formen ebenso blaue Abarten vorkommen, wie dies namentlich bei den grünen Cetoniden häufiger vorkommt. Mir hat dies jedenfalls der sehr bekannte Sammler Dodd in Kuranda (Nordqueensland) schon vor Jahren mitgeteilt.

Ferner bleibt über *L. coerulea* noch zu sagen, dass der Kopf auch blau gefärbt ist, und nicht rot, wie bei *latreillei* und *aurata*.

2. **Prosopocoelus corporaali,** sp. n. Fig. 1.

Mas. Piceo-niger, subsplendens, *P. decipiens*, Parry, *pasteuri*, Rits., et *Metopodontus bison*, Oliv. (*nec* Fabr.) consimilis. Caput transversum, valde granulosum, fronte excavato, in disco planatum et foveis duabus parvis instructum, angulis anticis fere acutis, cantho

ante oculos paulo excavato, lateribus parallelis, genis vix prominentibus; clypeo porrecto et in medio tuberculo instructo; mandibulis formae telodontae $2\frac{1}{2}$ capite longioribus, laeve rotundatis, planatis, intus ad basim dente bifido, in primo triente et post medium dentibus duobus acutis fere aequalibus armatis, inter dentem tertium et furcam finalem 4 dentibus parvis (1 et 4 majores quam 2 et 3) instructis. Prothorax capite latior sed minus granulosus, lateribus fere parallelis, paulo rotundatis, angulis anticis et medio marginis antici valde productis rotundatisque, angulis posticis rotundatis, margine postico bisinuato. Scutellum cordiforme granulosum, impunctatum. Elytra minutissime granulosa, subsplendentes, in medio prothoracis latitudine, humeris et apice rotundatis, in regione suturali rufo-piceis, in fine margine externo ochraceo-tincta ut in femina *Odontolabis lowii*, Parry var. *rufonotatus*, v. Rothenb.

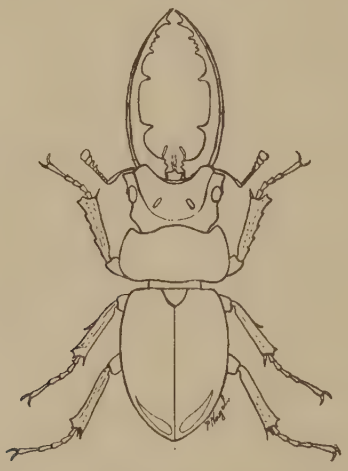


Fig. 1.—*Prosopocoelus corporaali*, sp. n.

Subtus piceo-niger, granulosus, impunctatus; mentum granulosum, margine antico rotundato et punctis magnis dense, in medio punctis nonnullis tectum. Femora maculis ochraceo-rufis tincta; tibiae anticae 4 dentibus parvis, intermediae dente magno instructae, posticae inermes.

Long. (forma telod.) elytr. 24 mm., prothor. 8 mm., capit. 10 mm., mand. 22 mm.; atit. max. elytr. 16 mm.

Hab. insula Buru (*L. J. Toxopeus*), vii–ix.1921.

J. B. Corporaal (Museum zoologicum Amsterdam) honoris causa haec species nominata est.

Fem. Feminae *Metopodontus bison*, Oliv., simillima. Caput transversum, opacum, antice perpaulo excavatum, punctis magnis—antice densis—instructum, disco laevi, angulis anticis rotundatis; clypeo porrecto, punctato rotundatoque; mandibulis unidentatis, coriaceis. Prothorax capite latior, vix splendidum, mediocriter et disparse in disco, dense et fortiter in angulis anticis punctatus, punctis non confluentibus; angulis anticis productis fere acutis, lateribus et angulis posticis valde rotundatis; omnino piceus sine macula ochracea cum macula nigra interna, ut in *M. bison* femina; margine postico fere recto. Scutellum cordiforme splendidum 4–6 punctis in margine antico solum instructum. Elytra subsplendida, minutissime, sed in suturae regione perpaulo fortiter punctata, stria

punctata suturae parallela instructa; marginibus vitta fulvo-rufa lata comitantibus, margine externo nigro.

Subtus piceo-nigra, minus dense et minus fortiter punctata ut in *M. bison*; Mentum dense fortiterque punctatum sed non rugosum, submentum vix punctatum. Femora rufo-tincta. Tibiae anticae ut in *M. bison* fem. 4-denticulata, intermediae et posticae dente magno acuto mediano instructae. Tarsi vix pilosi.

Long. corp. 28–34 mm., lat. 11–14 mm.

Diese hochinteressante neue Art fand ich in einer Sendung, die mir Herr J. B. Corporaal vom Amsterdamer Museum zur Determination zugesandt hatte, und ich habe sie ihm zu Ehren benannt. Sie verbindet den *Prosopocoelus decipiens*, Parry, mit *Metopodontus bison*, Oliv. Besonders die Weibchen beider Arten sind sich sehr ähnlich, aber es handelt sich bei der neuen Art um einen echten *Prosopocoelus*.

Das grösste Männchen ist oben und unten von pechbrauner Farbe. Der rechteckige Kopf ist fast schwarz, matt, oben abgeplattet und mit zwei kleinen Gruben versehen der Vorderrand tief ausgebuchtet, wie in *Metopodontus*, und ausgehöhlt aber ohne eine Spur der beiden kleinen Tuberkeln, die das Genus *Metopodontus* charakterisieren; der vorgestreckte Clypeus hat in der Mitte des Vorderrandes einen kleinen Tuberkel, sodass er 3-spitzig erscheint; die Vorderecken sind ziemlich scharf und nach auswärts gezogen, die Seiten parallel, hinter den Augen kaum vorgewölbt; die Mandibeln haben die $2\frac{1}{2}$ = fache Länge des Kopfes, sind regelmässig aber nur wenig einwärts gebogen, haben im ersten Drittel und hinter der Mitte je einen scharfen Zahn von mittlerer Grösse und zwischen dem letzteren und der gegabelten Spitze 4 kleine Zähnchen, von denen die beiden inneren kleiner als die äusseren sind. Der Prothorax ist breiter als der Kopf, die Mitte des Vorderrandes und die runden Vorderecken stark vorgezogen, die dunkelroten Seiten und die Hinterecken gerundet, die Granulation ist nicht ganz so rauh als die des Kopfes. Das herzförmige Schildchen hat keine Punktierung, sondern ist gerauht wie Kopf und Prothorax. Die Flügeldecken sind feiner granuliert, als der Prothorax, die Schulterecken gerundet, die Suturalregion dunkel rotbraun ohne eine Spur einer Punktreihe neben der Naht; am Ende haben sie einen mehr oder weniger breiten roten Fleck, wie die Weibchen von *Odontolabis lowii* var. *rufonotatus*, von Rothenb. Eine Anzahl Männchen, besonders der kleineren Formen haben aber diesen roten Fleck nicht, sondern sind einfarbig pechbraun.

Die Unterseite ist schwärzlich rotbraun, nicht punktiert mit Ausnahme des nur spärlich punktierten Vorderrandes des im übrigen granulierten Mentums. Die Schenkel haben einen roten Fleck, wie *Metopodontus bison* var. *tesserarius*, Herbst; die Vordertibien tragen 4 weitgestellte Dornen, die Mittelschienen haben in der Mitte einen starken Dorn, während die Hintertibien unbewehrt sind.

Die Mandibeln der übrigen Formen sind ebenso gezähnt wie bei *Met. bison*, nur hat auch bei dieser Art die amphiodonte Form, ebenso wie die telodonte Form am Grunde nicht den breiten, lappenförmigen und mehrfach gezähnten Zahn, sondern nur einen schmalen zweizipfeligen Fortsatz.

Das Weibchen ähnelt, auffallend dem von *M. bison*, ist aber nicht so glänzend, sondern etwas matter. Der Kopf ist mit tiefen und grossen Punkten besetzt, die nach der Scheibe zu zerstreuter werden; die Scheibe selbst ist matt und nicht punktiert; die Punkte neben den Augen fliessen nicht zusammen. Die Vorderbrust ist einförmig schwarz, wie die des Männchens ohne den gelben Randsaum mit schwarzem Fleck darin; sie ist glänzend, zerstreut und

fein punktiert in der Mitte, dichter am Vorderrande und den Seiten, aber auch hier fliessen die Punkte nicht zusammen; die Hinterecken sind regelmässig gerundet. Das glänzende Schildchen hat nur 4–5 Punkte an seinem Vorderrande. Die glänzenden Decken sind stärker punktiert, als beim Weibchen von *M. bison*, die Naht ist von einer Reihe tiefer Punkte begleitet, und auch an den Schultern werden die Punkte kräftiger. Neben dem ganz schmalen schwarzen Aussenrand verläuft eine breite rotbraune Binde, wie bei *M. bison*, die sich von den Schultern bis zur Spitze erstreckt, aber der schwarze Suturalfleck ist weniger scharf nach dem rotbraunen Bande hin begrenzt, als bei der andern Art: zwischen den Schultern und dem Schildchen ist noch ein kleiner gelblicher Fleck vorhanden am Vorderrande.

Die Unterseite ist nicht so stark punktiert, als bei *M. bison*; das Mentum ist tief punktiert, aber das Submentum hat nur einige wenige Punkte am Vorderrande. Die Schenkel haben wie beim Männchen einen gelbroten Fleck; die Vorderschienen sind genau so gestaltet und gezähnt, wie bei den verwandten Arten, die 4 hinteren Schienen tragen einen starken Dorn in der Mitte.

Die Typen 4 Männchen und 5 Weibchen befinden sich in meiner Sammlung; Cotypen in der Sammlung des Zoologischen Museum in Amsterdam und der Sammlung Didier in Paris.

3. *Eurytrachelus gypaetos*, Cast., var. **nigra**, var. n.

In der oben erwähnten Bestimmungssendung fand ich noch eine andere sehr interessante Farbenvarietät des allbekannten und ganz gemeinen *Eurytrachelus gypaetos*, Cast., in allen Formen vor. Die Farbe ist ein reines Schwarz über und über, wie in *E. alcides*, Voll., und *westermanni*, Hope, etc.; keine Spur von Pechbraun ist zu sehen und deshalb benenne ich diese Abart mit.

Diese schwarze Form stammt von verschiedenen Orten des Preanger Distriks aus Java! Die Typen in allen Formen und auch der Weibchen sind in meiner Sammlung, Cotypen in der des Zoologischen Museums in Amsterdam.

4. *Eurytrachelus intermedius* var. *buruensis*, Nagel.

(*Deuts. Ent. Z.* **1928**: 280, fig. 4.)

Diese in der Albers'schen Sammlung vorgefundene und von ihm i.l. so benannte Art ist weder eine Varietät noch eine gute Art, wie ich nunmehr an dem aus Amsterdam mir zugegangenen Material feststellen konnte. Es ist vielmehr nur die kleine Form des *E. saiga*, Olivier var. *ceramensis*, Thomson von verschiedenen Orten der Insel Buru. Die Varietät muss also gestrichen werden, sie hat keine Berechtigung.

5. *Prismognathus formosanus*, Nagel.

(*Deuts. Ent. Z.* **1928**: 274, fig. 2.)

Fem. *P. subaeneus*, Motsch., fem. simillimum sed colore clariore, fortiter denseque irregulariter punctatum, nitidum, rubro-castaneum. Caput fere quadratum, punctatum, angulis anticis rotundatis, cantho non excavato, disco fornicato, juxta oculos foveatum; labor subquadrato, mandibulis ut in specie affini. Prothorax fortius punctatus ut in *P. subaeneus*, angulis anticis productis acutis (nec rotundatis), lateribus postice divergentibus, angulis posticis late et perpaulo concaviter truncatis, 6 foveis maris in disco laeviter indicatis, in angulis externis laterum plaga nigra. Scutellum magnum cordiforme perpaulo punctatum. Elytra disparse punctata et in media parte rugulosa, marginibus externis elevatis, angulis anticis posticisque rotundatis.

Subtus splendidum. Mentum margine antica semicirculariter rotundato, punctis magnis disparsis instructum; processus prosterni magnum, punctatum; metasternum laevissime punctatum et in medio incisum; segmentes abdominales laevissime punctulati. Pedes setosis singulis tectae, tibiis anticis 3–4, intermediis 1–2 et posticis 1-spinosis, tarsis aureo-pilosis.

Long. 18 mm., lat. max. elytr., 7·5 mm.

Hab. Formosa: Arisan (*T. Shirati*), 5.vii.1931.

Ich bin Herrn Yushiro Miwa vom Agricultur Department in Taihoku (Formosa) sehr zu Danke für das vorliegende Stück verpflichtet, denn es handelt sich ohne Zweifel um das Weibchen meines *P. formosanus*. Es ist sehr glänzend, aber von etwas dunklerer Farbe als das Männchen, jedoch heller, als das Weib von *P. subaeneus*, Motsch., dem es sonst sehr ähnlich ist. Die Punktierung ist in allen Teilen der Oberseite stärker. Der Kopf ist länger, fast quadratisch, die Vorderecken sind gerundet, der Canthus oberhalb der Augen nicht ausgehöhlt; das Labrum ist rechteckig, die Mandibeln wie in *Pr. subaeneus*; die Oberseite ist stark gewölbt, tief punktiert und bei den Augen mit Grübchen versehen. Die Vorderecken des Prothorax sind nicht gerundet, wie in *P. subaeneus*, sondern sehr scharf und vorgezogen, die Seiten nach hinten verbreitert und hinten breit und etwas concav abgeschnitten; die Oberfläche ist kräftig, aber nur zerstreut punktiert und weist an gleicher Stelle, wie beim Männchen, beiderseits je 3 undeutliche Gruben auf; in der Mitte des Aussenrandes ist ein schwarzer Fleck zu unterscheiden. Das grosse, herzförmige Schildchen trägt nur an der Basis einige wenige Punkte. Die Flügeldecken, welche in *P. subaeneus* fein und dicht punktiert sind, haben in der neuen Art eine viel zerstreutere Punktierung, besonders an der Basis, wohingegen die mittleren Teile runzelig und rissig sind; auch bei dieser Art ist der Aussenrand der Decken hochgewölbt; Vorder-und Hinterecken sind gerundet, die Seiten fast parallel.

Unterseits glänzend, Metasternum fein punktiert, ebenso die Epipleuren und die Beine; die Punkte tragen feine lange goldene Härchen. Das Metasternum ist in der Mitte fein gerillt, der Prosternalprozess gross und punktiert. Das Mentum trägt grosse und tiefe Punkte, sein Vorderrand ist halbrund. Die Abdominalsegmente sind äusserst fein punktiert (nur mit dem Glase zu sehen). Vordertibien 3–4, Mitteltibien 1–2 und Hintertibien mit 1 kräftigen Dorne versehen, der unterhalb der Mitte steht. Die Tarsen sind golden behaart.

Das typische Stück ist ebenfalls in meiner Sammlung, wie auch das typische Männchen.

6. **Aegus crucifer**, sp. n. Fig. 2.

Mas. Piceo-niger, splendidus, *A. latidens*, Schauf., consimilis, sed differt. Caput transversum, angulis anticis rotundatis, margine natico paulo excavato, cantho lato rotundato punctatoque, post oculos sine processu, clypeo angusto, excavato, punctato; mandibulis capitis longitudine, intus ad basim dente magno splendido, postice directo instructis, dense punctatis; disco subplanato, disparse sed fortiter punctato, lateribus dense punctatis, postice laevi, ante oculos tuberculo parvo instructo. Prothorax in disco minus, lateribus dense punctatus, medio in disco spatium in forma crucis splendidum, lateribus crenulatis et setosis aureis singulis positis, angulis anticis rotundatis et minus porrectis, posticis truncatis. Scutellum cordiforme et—in medio exceptum—punctatum. Elytra 7-striata, interstitiis dense laevissime punctulatis, margine antico, humeris et lateribus dense et fortiter punctatis, lateribus in primo triente crenulatis, punctis majoribus setosis; stria

prima (ad suturam) in apice finiens, 2. in apice circumflexa et marginem externum comitans, 3. cum 4., 5. cum 6. et 7. cum 8. indistincta confluens.

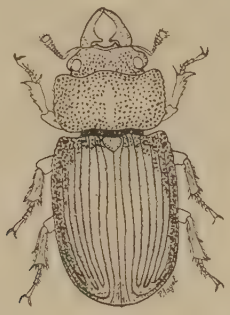


Fig. 2.—*Aegus crucifer*, sp. n.

Subtus niger, punctatus, splendidus. Mento dense fortiterque punctato, margine antico excavato, submento dense punctato. Pedes nigri; tibiae anticae 3–5 dentatae, intermediae et posticae fortiter unidentatae, dense setosae, tarsi setosi.

Long. corp. (mand. inclus.) 15 mm., lat. max. elytr., 6·5 mm.

Hab. Nova Guinea: Fly flumen (*L.M.D. Albertis*), 1876/77.

Diese neue Art ist nach der Beschreibung des *A. latidens*, Schauf., diesem sehr ähnlich und nach einem augenscheinlich kleinen Stück aufgestellt, wie die Figur zeigt. Pechschwarz. Der queroblonge Kopf hat gerundete Vorderecken, breiten jedoch nicht tief ausgebuchteten Vorderrand und schmalen, wenig ausgebuchteten und leicht punktierten Clypeus; der grosse Canthus ist punktiert und gerundet; der Vorderrand des Kopfes ist dicht mit kleinen Punkten besetzt, die grösser und zerstreuter auf der abgeplatteten Scheibe werden, und an den Seiten am grössten und dichtesten sind; der Hinterrand ist in der Mitte glänzend und ohne Punkte. Der Prothorax ist breiter als der Kopf. mit gerundeten Vorderecken, Seiten parallel und gesägt und mit einzelnen goldenen Haaren besetzt, die Hinterecken sind abgeschnitten, die Oberseite stark punktiert und mit einem glänzenden unpunktierten Fleck in Form eines Kreuzes in der Mitte. Die glänzenden Flügeldecken haben 7 sehr deutliche Rillen, eine 8. ist angedeutet; die Zwischenräume sind sehr fein, der Vorderrand, die Schultern und der Aussenrand dagegen kräftig punktiert, wie dies beim Genus *Aegus* meistens der Fall ist; das erste Drittel des Aussenrandes ist ebenso gesägt, wie der Rand der Vorderbrust; die grossen Punkte tragen feine goldene Härchen; die erste Rille von der Naht aus endet am Ende der Decken, die zweite ist an der Spitze umgebogen und läuft am Aussenrande entlang, die 3. ist mit der 4., die 5. mit der 6. und die 7. mit der undeutlichen 8. am Deckenende verbunden. Das herzförmige Schildchen ist am Vorderrande mit einigen grossen Punkten besetzt.

Die Unterseite ist stark punktiert, besonders das Mentum und das Submentum, die beide sehr rauh skulptiert sind. Die Vorderschienen tragen 3 grössere und 2 sehr kleine Zähne, die 4 hinteren haben nur einen scharfen Zahn in der Mitte und ausserdem Rillen, die mit kurzen goldenen Härchen dicht besetzt sind. Die Fussglieder sind ebenfalls golden behaart.

Das typische Stück in der Sammlung des Britischen Museums. Weibchen ist unbekannt.

7. **Aegus eximius,** sp. n. Fig. 3.

Mas. Piceo-niger, *A. falcicornis* me similis, sed differt. Caput opacum, lateraliter fornicatum, in disco triangulariter planatum et minutissime punctulatum, angulis anticis rotundatis, lateribus parallelis, margine antico late excavato, excavatio lateraliter in tuberculis distinctis finiens; mandibulis capitis longitudine, opacis et valde rotundatis, sursum arcuatis, basi dentre magno obtuso horizontaliter directo instructis, apice non acuto sed tuberculo lato infra posito. Prothorax splendidus, lateribus perpaulo sinuatis parallelis et setosis, angulis anticis productis et angulis posticis rotundatis, margine antico stria punctata in trientibus externis comitante, lateribus minutissime punctulatis. Scutellum ovaliter cordiforme, splendidum, impunctatum. Elytra prothorace angustiora, angulis anticis acutis nec dentatis, lateribus fere parallelis, setosis, omne elytrum 6 striis minutissime vix punctulatis et 3 striis punctatis (9. valde indistincta) instructis, interstitiis impunctatis, apice et interstitiis externis aureo-setosis.

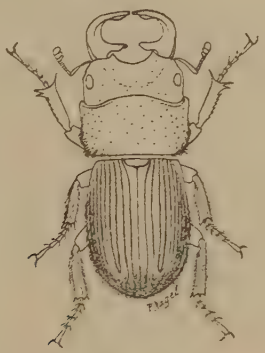


Fig. 3.—*Aegus eximius*, sp. n.

Subtus rufo-piceus, splendidus, mentum et submentum opacum, disparse punctatum; tibiae anticae extus serratae, intermediae et posticae non spinosae, striis setosis aureis tectae.

Long. corp. (mand. inclus.) 14·5 mm.; lat. max. 5 mm.

Hab. Sarawak (Borneo borealis): Monte Murud 6000–7000 pedes (*Dr. E. Mjöberg*), 1924.

Femina ignota.

Diese reizende Art fand ich in einer Serie von *A. malaccus*, Thoms., die mir Dr. Mjöberg vor einigen Jahren schenkte und die er während seiner Expeditionen 1922/24 zur Lösung des Trilobiten-Rätsels (siehe meine Arbeit darüber in den Ent. Blätt. **1926**: 173) erbeutet hatte. Ich fand von dieser neuen Art 2 Stück vor. Die Färbung ist oben pechbraun, fast schwarz, unten sehr dunkel braunrot. Der grosse rechteckige Kopf ist matt, die Seiten stark gewölbt und parallel, die Oberseite dreieckig verflacht und sehr fein punktiert (nur mit der Linse zu sehen); die Vorderecken sind gerundet, der Vorderrand breit ausgebuchtet und an jeder Seite der Ausbuchtung mit einer scharfen Spitze versehen. Die matten Mandibeln sind so lang als der Kopf, die Vorder-

hälfte stark einwärts gebogen und etwas aufwärts gerichtet; sie haben einen grossen stumpfen Zahn an der Basis, der horizontal gerichtet ist, während die Unterseite des Spitzenteils länglich angeschwollen ist in Form eines verlängerten Tuberkels. Die Vorderbrust ist von Kopfes Breite und sehr glänzend, die Seiten etwas geschwungen und mit moosigen gelbbraunen Haaren im hinteren Teil besetzt; die Vorderecken sind vorgezogen und ebenso wie die Hinterecken abgerundet; der Vorderrand ist in den beiden äusseren Dritteln von einer feinen Punktreihe begleitet, und auf den Seiten kann man mit dem Glase ebenfalls eine sehr feine Punktierung feststellen. Das Schildchen ist kurz, aber breit, glänzend und nicht punktiert. Die sehr glänzenden Flügeldecken sind schmaler als die Vorderbrust, mit parallelen Seiten und scharfen, jedoch nicht gezähnten Schulterecken; jede Decke hat 6 sehr fein punktierte Rillen und 3 undeutliche Punktreihen (die 9. ist sehr undeutlich festzustellen). Die Zwischenräume sind glatt, nicht punktiert, in der Gegend der Naht flach, am Aussenrande dagegen etwas gewölbt; der Aussenrand ebenso wie die Spitze fein moosig behaart.

Unterseits sehr glänzend, nur das Mentum und Submentum sind matt und zerstreut punktiert, die Epipleuren dagegen haben eine stärkere Punktierung. Die Vorderschienen sind am Aussenrande gesägt, die 4 hintern Schienen dagegen ohne Dorn, aber mit goldenen Haarstreifen besetzt.

Die beiden typischen Stücke befinden sich in meiner Sammlung und in der des Britischen Museums.

8. **Aegus porrectus,** sp. n. Fig. 4.

Mas. Piceus, opacus, *A. adelphus*, Thoms., simillimus, sed differt. Caput transversum, opacum et fornicatum, margine antico in triente medio latitudinis excavato, angulis anticis et canthis rotundatis, disco fornicato, minutissime et disparse punctulato; cantho rotundato et lateraliter fuliginoso; supra oculos tuberculo parvo et infra oculos carina circumflexa

Fig. 4.—*Aegus porrectus*, sp. n.

instructum; mandibulis porrectis, apice incurvatis (in adelpho curvatis), subsurdis et minutissime punctulatis, intus dente parvo basali et in medio supra dente majore instructis. Prothorax capitis latitudine, subsurdus, margine antico in medio perpaulo splendente, lateribus parallelis fuliginosis, angulis anticis rotundatis, posticis truncatis, in disco laeviter et disparse punctulatus et fovea indistincta impressa. Scutellum cordi-

forme splendidum punctatum. Elytra nitida, margine antico punctato, 12-striata (in adelpho 18-striata), prothorace angustiora, illo duplo longiora, interstitio suturali punctato, interstitiis 2–6 impunctatis, lateraliter valde fuliginosa.

Subtus splendidus, mentum antice et lateraliter fuliginosum, antice excavatum et disparse punctulatum ut submentum. Tibiae anticae 3-dentatae, intermediae et posticae inermes sed valde aureo-pilosae; tarsi laeves.

Long. corpor. (mandib. inclus.) 11·5 mm.; lat. max. prothor. 5 mm.

Hab. in Sarawak (Borneo borealis): Mons Murud, 6000–7000 pedes (*Dr. E. Mjöberg*).

Femina ignota.

Diese reizende neue Art ist dem *A. adelphus*, Thoms., sehr ähnlich; ich fand sie in derselben Serie vor, die ich eben erwähnte als von Dr. Mjöberg erhalten. Ich hielt sie zuerst für die verwandte Art, aber sie ist von dieser doch in einigen Punkten sehr deutlich verschieden. Das allgemeine Äussere gleicht der Thomson'schen Art, auch die Farbe ist die gleiche, nur ist die Körperform schlanker. Der Kopf ist matt, gewölbt und fast ebenso breit als lang, das mittlere Drittel des Vorderrandes ausgebuchtet, die Vorderecken gerundet, der Canthus breit halbrund und ebenso, wie die Seiten der Vorderbrust mit moosiger Behaarung bekleidet; er ist mit einer zerstreuten feinen Punktierung bedeckt, die nach den Augen zu dichter und grösser wird; die kleinen Tuberkeln vor den Augen sind durch eine kurze herumgebogene Leiste verlängert; die Mandibeln sind $1\frac{1}{2}$ mal so lang als der Kopf, schlank, gerade und nur an der Spitze einwärts gebogen; an der Basis haben sie einen kleinen Zahn, in der Mitte einen etwas grösseren, der auf der Oberseite aufsitzt und einwärts gebogen ist, wie bei *A. capitatus*, Westw.; sie sind matt und mit äusserst feinen Punkten bedeckt, die mit dem blossen Auge nicht wahrnehmbar sind. Die Vorderbrust ist matt und ebenso breit als der Kopf, Seiten parallel, Vorderecken gerundet, der Vorderrand wird von einer Reihe deutlicher Punkte begleitet, die Scheibe hat am Vorderrande einen etwas glänzenden Fleck und in der Mitte eine flache Grube, die zerstreut mit Punkten, etwas stärker als auf dem Kopfe, bedeckt ist; die Seiten der Vorderbrust sind unpunktiert. Das kleine Schildchen ist deutlich punktiert. Die glänzenden Flügeldecken sind an den Schultern schmaler als der Prothorax, verbreitern sich nach der Mitte zu und haben 12 deutliche und 2 undeutliche Rillen, von denen die 5. und 6. am Ende miteinander verbunden sind; der Vorderrand ist tief punktiert, die Zwischenräume sind glatt mit Ausnahme des ersten neben der Naht, der eine Reihe deutlicher Punkte trägt; die Seiten sind ebenfalls breit moosig behaart.

Die pechbräune Unterseite ist glänzend. Das Mentum matt mit ausgebuchtetem Vorderrand, die Seiten behaart, die Vertiefung in der Mitte mit feinen zerstreuten Punkten bedeckt, wie auch das Submentum. Die Vordertibien haben am Aussenrande 3 Zähne, die 4 hinteren haben keine Spur eines Dorns, sind dagegen mit Reihen goldener Haare besetzt, wie auch die Tarsen lang golden behaart sind. Das Weibchen ist unbekannt.

Diese neue Art unterscheidet sich von dem nahe verwandten *A. adelphus*, Thoms., durch die längeren und sehr gestreckten Mandibeln, durch die kürzeren Flügeldecken, die nur 12 (nicht 18) Rillen haben, die mit einer Ausnahme nicht punktierten Zwischenräume und die glänzende und unpunktierte Unterseite.

Die kleineren Männchen haben einen etwas glänzenderen Kopf und Vorderbrust und ähnelen sehr den kleineren *A. adelphus*, aber die Mandibeln bleiben schlanker und gestreckter als in der verwandten Art, wo sie stärker gebogen sind. Das typische Stück befindet sich in meiner Sammlung; 3 weitere

Stücke fand ich in der mir vom Britischen Museum zur Begutachtung zugegangenen Sendung vor.

9. **Cardanopsis bicolor** var. **nigra,** var. n.

Femina. In omnibus partibus ut bicolor, sed omnino nigra.

Hab. Londiani, Masai reservatio (Africa orient. brit.) et Ngare Narok, 1919.

Diese hochinteressante Art wurde in einem weiblichen Stück von Prof. Dr. Yngve Sjöstedt von Stockholm auf seiner Expedition in Deutsch-Ost-Afrika 1905/6 erbeutet und vorher schon von Ch. Alluaud in 2 männlichen Stücken am Kilimandjaro. Sie ist von Boileau beschrieben im Band 7, Teil 17 der "Wissenschaftlichen Ergebnisse der Schwedischen Zoologischen Expedition nach dem Kilimandjaro und Meru . . ." Der Autor sagt, dass bei *bicolor* rot gefärbt seien: der Vorderrand des Kopfes, die Mitte der Mandibeln, das Mentum mit dem Submentum, das Pronotum, die Episternen usw. In der vorliegenden Abart jedoch ist keine Spur von Braun oder gar Rot zu sehen, sie ist vollkommen schwarz, wie *Figulus* und *Nigidius*. Die beiden vorliegenden Weibchen müssen daher als eine schwarze Abart angesehen werden; sie sind in der Sammlung des Britischen Museums und der meinigen enthalten.

10. **Ceruchus sinensis,** sp. n. Fig. 5.

Mas. Niger, splendidus, *C. atavus*, Fairm., et *lignarius*, Lewis, simillimus, sed differt. Caput fere quadratum, valde fornicatum, in fronte excavatum, margine antico concaviter inflecto, sed in medio in tuberculo acuto producto, angulis anticis lateribusque rotundatis, rugosis (minus ut in *C. atavus* et *lignarius*), in disco laeviter et disparse punctulatum, margine

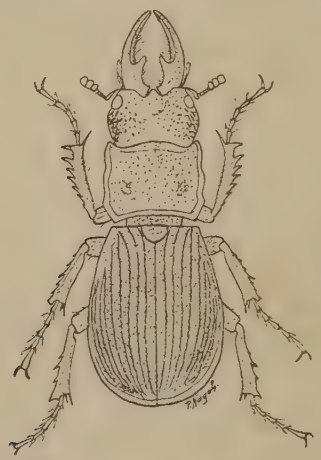


Fig. 5.—*Ceruchus sinensis*, sp. n.

postico laevi (in *C. atavus* discus capitis fortiter, margo posticus fortissime punctatus; in *C. lignarius* discus magis disparse sed fortiter ut in sinensi punctatus, margo posticus punctis magnis rotundatis in medio tuberculo parvo instructis tectus); mandibulis latitudinis capitis longitudine, inclinatis, margine inferiore in 2/3 longitudinis setis aureis

longis tecto, in primo triente dente magno acuto antice et perpaulo sursum directo instructis, punctulatis. Prothorax capitis latitudine disparse punctulatus, angulis anticis productis, fere acutis, margine postico perpaulo concavo, lateribus bisinuatis, foveis duabus instructis, canaliculatis, in disco perpaulo longitudinaliter incisus et laevis, margine antico stria fere impunctata. Scutellum cordiforme postice rotundatum et disparse punctatum. Elytra in ultimo triente prothorace latiora, 18 striis perpaulo punctatis instructa, interstitiis valde fornicatis et dense punctulatis, marginibus externis subjectis, apice rotundata.

Subtus splendidus, piceo-tinctus, disparse et laeviter-in genis, submento et epipleuris fortius-punctatus. Pedes disparse aureo-setosae; femora punctulata; tibiae anticae extus 6 dentibus acutis, intermedia extus serratae, posticae dente magno acuto et ante et post illum dente parvo instructae. Tarsi pilosi.

Long. corpor. (mand. incl.) 14·5 mm.; lat. max. elytr. 5 mm.

Hab. Yunnan (China merid.-occid.): Mons Francis Gardner, 8000 pedes. (*Prof. I. W. Gregory*).

Typus in Museo Britannico, London.

Diese neue *Ceruchus*–Art ist den beiden schon bekannten asiatischen Arten (*atavus*, Fairm., und *lignarius*, Lewis) sehr ähnlich, zeigt aber doch eine Reihe charakteristischer Unterschiede. Sie ist viel schmaler, glänzender und oberseits schwarz, unterseits pechbraun. Der fast quadratische Kopf ist stark gewölbt, die etwas gerundeten Seiten stark gerunzelt, die Oberseite fein und zerstreut punktiert, der ausgebuchtete Vorderrand in der Mitte in eine scharfe Spitze ausgezogen, Stirn ausgehöhlt, der Hinterrand nicht punktiert. In *C. atavus* ist die Oberseite dichter und stärker punktiert, der Hinterrand sogar sehr stark; in *C. lignarius* ist der neuen Art gegenüber die Oberseite des Kopfes zerstreuter aber tiefer punktiert, der Hinterrand zeigt bei *lignarius* eine Reihe grosser runder Punkte mit einer kleinen Spitze darin, wie ein Mondkrater gestaltet; die bei *sinensis* etwas geneigten Mandibeln sind so lang als der Kopf breit ist, tragen am Innenrande auf 2/3 ihrer Länge lange goldene Haare und haben im ersten Drittel einen sehr grossen aufwärts und etwas vorwärts gerichteten Zahn (in *C. atavus* ist dieser Zahn nur aufwärts, nicht auch einwärts gerichtet, während er bei *C. lignarius* ebenfalls sehr gross und aufwärts und zugleich etwas einwärts gerichtet ist). Die Vorderbrust ist so breit wie der Kopf, die Seiten doppelt geschweift, der Hinterrand regelmässig einwärts gezogen; die Scheibe ist mit feinen und tiefen Punkten zerstreut bedeckt, in der Mitte sieht man eine feine Längsfurche, während an den Seiten sich zwei undeutliche Gruben befinden; die Seiten sind ebenso wie der Hinterrand von einer Rille begleitet, sodass die Ränder wie aufgebogen aussehen; der Vorderrand zeigt einen fast unpunktierten Streifen. Die Flügeldecken sind in ihrer letzten Hälfte breiter als die Vorderbrust und von der Mitte an haben sie einen aufgebogenen Aussenrand, wie alle *Ceruchus*-Arten; sie enden hinten in einem regelmässigen Halbrund und haben jede 9 tief punktierte Streifen mit hochgewölbten und dicht und fein punktierten Zwischenräumen, die bei *C. atavus* flach und bei *lignarius* wenig gewölbt sind.

Die Unterseite ist sehr glänzend, pechbraun, fein und zerstreut punktiert, nur die Wangen, Submentum und die Epipleuren sind kräftiger punktiert. Die Beine sind lang golden behaart, die Schenkel fein punktiert, die Vordertibien tragen 6 grosse scharfe Zähne, die Mitteltibien sind gesägt, die Hintertibien haben in der Mitte 1 grossen und davor sowie dahinter noch einen kleinen Dorn.

Das typische Stück befindet sich in der Sammlung des Britischen Museums in London.

DE SPECIEBUS NOVIS GENERIS *PLATYSMA*, BON. (COL., CARABIDAE)

Auctore V. Lutshnik.

(*Stauropoli.*)

Platysma (Parapedius) tremebundum, sp. n.

Validiusculum, nigrum, supra viridi-nigrum, antennis, palpis pedibusque nigro-piceis. Capite haud lato, disperse, subtiliter punctulato, impressionibus frontalibus latis haud profundis. Oculis parvis, parum prominulis. Prothorace transverso, basi angustiore quam apice, lateribus antice fortiter dilatato-rotundato, latitudinem maximam ante medium attingente, ante angulos posticos subrectos breviter sinuato; basi haud distincte sinuato; disco medio parum convexo, obsolete transversim rugoloso et disperse punctulato, basi crebre rugoso-punctato utrinque bistrigato, striga interna sat magna, profunda, externa obliterata vix distincta; linea media haud profunda utrinque abbreviata. Elytris sat latis, elongatis, convexis, ante apicem sinuatis, thorace latioribus, profunde striatis, striis distincte crenulatis, striola scutellari longa, interstitiis subconvexis, tertio bipunctato; carinula basali sinuata, ad humerum denticulo terminata. Sterno ad latera et abdomine punctatis. Prosterni processu intercoxali laevi, apice marginato. Episternis metathoracis latitudine multo longioribus, apice angustioribus. Segmento anali ♀ utrinque bipunctato. Onychio subtus glabro.

Long. 13·5 mm.

Transcaucasia: Shemacha. Specimen unicum (♀) in coll. m.

A *P. crenuligerum*, Chaud., differt colore obscuriore, oculis parum prominulis, prothorace angustiore, apice magis sinuato, elytris angustioribus, lateribus parum rotundatis, interstitiis minus convexis.

Platysma (Parapedius) gradojevitshi, sp. n.

Validiusculum, nigrum, supra violaceo-nigrum, antennis, palpis pedibusque piceo-nigris. Capite lato, omnino laevi, impressionibus frontalibus parvis, obliteratis. Oculis convexis, sat prominulis. Prothorace transverso, basi quam apice distincte angustiore, lateribus antice fortiter dilatato-rotundato, latitudinem maximam paulo ante medium attingente, basin versus valde angustato, ante angulos basales sinuato, his rectis, angulis anterioribus sat productis; basi fere recto; disco medio convexo, laevigato, basi utrinque parce punctato, striga basali interna elongata, valde profunda, externa brevissima, vix determinata, linea media tenui, postice valde abbreviata. Elytris sat latis, elongatis, parum convexis, ante apicem subsinuatis, thorace latioribus, striatis, striis profundis, punctatis, striola scutellari longa, interstitiis convexis, tertio bipunctato; carinula basali parum sinuata, ad humerum denticulo terminata. Corpore subtus punctato. Prosterni processu intercoxali laevi, apice marginato. Episternis metathoracis elongatis, apice angustioribus. Segmento anali in ♂ utrinque unipunctato. Onychio subtus glabro.

Long. 14 mm.

Rossia mer.-oz.: Uralsk. Specimen unicum (♂) in coll. m.

Species *P. crenuligerum*, Chaud., haud diffinis colore obscuriore, capite haud punctato, thorace basi fere impunctato, elytris striis profundioribus, interstitiis convexioribus, carinula basali minus sinuata omnino diversa.

Amico meo, entomologo jugoslavico M. Gradojević grato animo dedicatum.

Platysma (Derus) zhicharevi, sp. n.

Validum, subdepressum, piceum, antennis, palpis pedibusque piceo-brunneis. Capite transverso, vertice laevi, fronte subtiliter, disperse punctato, impressionibus frontalibus

brevibus sed sat latis, haud profundis. Oculis parvis, parum prominulis. Prothorace capite multo latiore, valde transverso, cordato, apice parum sinuato, angulis anticis rotundatis, parum prominulis, lateribus anterius dilatato-rotundato, latitudinem maximam ante medium attingente, basin versus angustato, ante angulos posticos sinuato, his rectis; disco medio non convexo, laevigato, basi in impressionibus basalibus longis et profundis parum punctato, linea media haud profunda, postice magis impressa utrinque abbreviata. Elytris sat latis, elongatis, subdepressis, ad humeros thoracis basi latioribus, profunde striatis, striis omnibus distincte crenulatis, striola scutellari longa, inter striam primam et secundam posita, interstitiis haud convexis, tertio bipunctato; carinula basali sinuata ad humerum denticulo prominulo terminata. Sterno ad latera sat fortiter, abdomine subtilius punctatis. Prosterno processu intercoxali laevi, apice distincte marginato. Episternis metathoracis valde angustis et elongatis. Segmento anali in ♂ utrinque unipunctato. Onychidio subtus glabro.

Long. 13·5—15 mm.

Prov. Turgaiensis: Ber-Tshogur (*P. Zhicharev*). 2 specimina (♂♂) in coll. m.

A *P. advena*, Quens., (cui affine) differt capite latiore, subtilius punctato, oculis minus prominulis, prothorace lateribus paulo rotundato, elytris striis paulo profundioribus, carinula basali distinctius sinuata.

Platysma (Derus) kozhevnikovianum, sp. n.

Validum, deplanatum, piceum, antennis, palpis pedibusque brunneo-piceis. Capite lato, punctato, impressionibus frontalibus parvis, sat profundis. Oculis convexis, valde prominulis. Prothorace transverso, valde cordato, apice parum sinuato, angulis anticis late rotundatis, vix prominulis, lateribus anterius valde dilatato-rotundato, latitudinem maximam ante medium attingente, basin versus valde angustato, ante angulos posticos valde sinuato, his acutis, extrorsum prominentibus; disco parum convexo, laevigato, basi disperse punctato, striga basali interna elongata, valde profunda, externa brevissima, vix distincta, linea media sat profunda, antice posticeque valde abbreviata. Elytris latis, elongatis, lateribus parum rotundatis, dorso subdepressis, ad humeros thoracis basi multo latioribus, tenuiter striatis, striis distincte punctatis, striola scutellari longa, inter striam primam et secundam posita, interstitiis planis, tertio bipunctato, carinula basali valde sinuata, humeris denticulo prominulo armatis. Sterno ad latera et abdomine punctatis. Prosterno processu intercoxali laevi, apice marginato. Episternis metathoracis latitudine longioribus, apice parum angustioribus. Segmento anali in ♀ utrinque punctis setigeris 2 instructo. Onychidio subtus glabro.

Long. 13 mm.

Sibiria or.: Stretensk. 1 ♀ in coll. m.

Species insignis, thoracis forma singulari al omnibus speciebus hujus subgeneris omnino diversa.

Memoriae G. A. Kozhevnikov, zoologi meritissimi, dedicata.

Platysma (Haptoderus) inopinatum, sp. n.

Robustum, modice elongatum, subdepressum, nigro-piceum, nitidum, palpis pedibusque rufescentibus, antennis picescentibus. Capite sat lato, nitido, tenuiter punctulato, impressionibus frontalibus haud profundis. Oculis prominulis. Prothorace transverso, apice profunde sinuato, basi subsinuato, lateribus antice rotundato, basi quam apice paulo minus angustato, ante angulos posticos rectos distincte sinuato, angulis anticis late rotundatis, parum prominulis; disco subconvexo, nitido, medio laevi, basi (praecipue in impressionibus basalibus latis sed haud profundis) crebre ruguloso-punctato; linea media sat profunda utrinque haud abbreviata. Elytris latis, modice elongatis, subdepressis,

oblongo-ovalibus, ad humeros thoracis basi multo latioribus, profunde-striatis, striis crebre punctatis, striola scutellari distincta, inter suturam et striam primam posita, interstitiis convexis, 3° tripunctato; carinula basali ad humerum angulata denticuloque distincto terminata. Corpore subtus ad latera punctulato, abdomine sublaevigato, segmento ultimo in ♂ utrinque puncto unico instructo. Onychidio subtus glabro.

Long. 7·5 mm.

Caucasus occ. : mons Aibga. 2 ♂♂ in coll. m.

A *P. percontator*, Reitt., cui similis, differt corporis forma multo angustiore, thorace parum transverso, basi fortius punctato, lateribus parum rotundato, elytris angustioribus, interstitiis parum convexis.

Platysma (Haptoderus) pithyusicum, sp. n.

Oblongum, parum convexum, rufo-brunneum, antennis, palpis pedibusque dilutioribus. Capite laevigato, ad oculis parvis, paulo prominulis, parce punctato, impressionibus frontalibus elongatis, sat profundis. Prothorace longitudine sua paulo latiora, apice sinuato, angulis anticis prominulis, paulo rotundatis, lateribus antice leviter dilatato et rotundato, basin versus angustato, post medium vix sinuato, angulis basalibus subrectis; disco leviter convexo, laevigato, basi punctato, impressionibus basalibus profundis, elongatis; linea media sat profunda utrinque abbreviata. Elytris ad humeros thorace sensim, medio multo latioribus, oblongo-ovalibus, lateribus rotundatis, subconvexis, profunde striatis, striis distincte et crebre punctatis, stria praescutellari brevi, interstitiis parum convexis, tertio bipunctato; carinula basali ad humeros angulata denticuloque terminata. Corpore subtus punctato, segmento anali in ♂ medio valde et profunde foveolato utrinque puncto setigero instructo.

Long. 8·8—9·2 mm.

Caucasus occ. : Pitzunda. 2 ♂♂ in coll. m.

Species magnitudine majore, statura graciliore, elytris depressis, a speciebus caucasicis consubgeneribus valde divergens.

Platysma (Haptoderus) firmum, sp. n.

Validiusculum, elongatum, modice nitidum, piceum, antennis, palpis pedibusque ferrugineis. Capite haud magno, laevi, impressionibus frontalibus elongatis sat profundis. Prothorace subquadrato, latitudine paulo breviore, apice vix sinuato, basi subrecto, lateribus antice parum rotundato, basi quam apice subaequaliter angustato, ante angulos posticos parum prominulos haud sinuato, angulis anticis late rotundatis haud prominulis; disco medio non convexo, basi utrinque punctato, striga basali interna elongata, sat profunda, externa brevissima; linea media profunda, basi magis impressa utrinque abbreviata. Elytris thoracis basi ad humeros latioribus, elongato-subellipticis, lateribus rotundatis, convexis, profunde striatis, striis punctatis, interstitiis convexis, tertio tripunctato; carinula basali subsinuata, ad humeros denticulo subnullo instructo. Sterno et abdominis segmentis basalibus punctatis, segmento ultimo in ♀ utrinque bipunctato.

Long. 6·2 mm.

Caucasus occ. : montes prov. Kutaisiensis. 1 ♀ in coll. m.

P. iripennis, Chaud., simile, a quo differt statura multo minore, prothorace paulo angustiore, basi utrinque distincte punctato, elytrorum striis profundioribus, parum punctatis.

Platysma (Oreoplatysma) belizini, sp. n.

Elongatum, parum convexum, piceum, antennis, palpis pedibusque ferrugineis. Antennis sat longis, articulo tertio glabro. Capite sat lato, laevi, in impressionibus

frontalibus latis, parum profundis, indistincte punctulato. Oculis haud convexis. Prothorace transverso, longitudine sua multo latiore, apice sinuato, angulis anticis prominulis, rotundatis, lateribus antice dilatato et valde rotundato, latitudinem maxima longe ante medium attingente, basin versus angustato, ante angulos posticos sinuato, his subacutis, prominentibus; disco convexo, impunctato, basi rugoso, in impressionibus basalibus latis sat profundis, punctato; linea media profunda, antice parum abbreviata. Elytris ovalibus, thoracis multo latioribus, latitudine maxima post medium, ad humeros angustatis, profunde striatis, striis vix punctatis, 5ª cum 6ª antice conjunctis, interstitiis convexis, tertio bipunctato, carinula basali ad humeros angulum parum distinctum formante. Sterno et abdominis segmentis basalibus subtiliter punctatis, segmento ultimo in ♀ utrinque punctis setigeris 2 instructo. Onychidio subtus glabro.

Long. 9 mm.

Caucasus occ.: Suchum, 15.v.1932 (*V. Belizin*). 1 ♀ in coll. m.

Species *P. pulchellus*, Fald., similis, forma angustiore, thorace minus transverso, basi multo magis angustato, elytris striis indistincte punctatis omnino diversa.

Platysma (Haplomaseus) krulikovskyi, sp. n.

Elongatum, parum convexum, nigrum, antennis, palpis pedibusque rufo-piceis. Capite haud lato, laevi, impressionibus frontalibus profundis. Oculis convexis. Antennis sat brevibus, articulo tertio glabro, haud pilosulo. Prothorace subquadrato, longitudine sua vix latiore, apice parum sinuato, fere recto, angulis anticis haud prominulis; lateribus antice vix dilatato, fere non rotundato, latitudine maxima ante medium, dein basin versus parum angustato, indistincte subsinuato, angulis posticis rectis; disco paulo convexo, laevigato, basi utrinque punctato, impressionibus basalibus profundis; linea media valde profunda utrinque abbreviata. Elytris convexis, elongatis, profunde punctato-striatis, interstitiis convexis, tertio tripunctato; carinula basali recta, ad humeros denticulum parvulum, vix distinctum formante. Corpore subtus ad latera punctulato. Prosterno processu apice haud marginato. Segmento anali (♀) utrinque bipunctato. Onychidio subtus haud piloso.

Long. 13·5 mm.

Caucasus: Teberda (*A. Zolotarev*). 1 ♀ in coll. m.

Species *P. caucasicus*, Mén., haud diffinis, thorace subquadrato, basi multo minus angustato, lateribus parum rotundato, apice fere recto omnino diversa.

In memoriam amici mei, egregii lepidopterologi, L. K. Krulikovsky nominata.

Platysma (Haplomaseus) jugicola, sp. n.

Latum, parum convexum, nigrum, antennis pedibusque nigro-piceis, palpis brunneis. Capite lato, laevi, impressionibus frontalibus latis, sat profundis. Oculis parum prominulis. Antennis brevibus, articulo tertio apice intus pilosulo. Prothorace transverso, longitudine sua multo latiore, apice profunde sinuato, angulis anticis parum prominulis, apice rotundatis, lateribus anterius parum dilatato et rotundato, basin versus angustato, ante hanc sat fortiter sinuato, angulis posticis subrectis, disco modice convexo, basi utrinque parum punctato; linea media profunda utrinque valde abbreviata, impressionibus basalibus profundis. Elytris parum convexis, breviter ovalibus, thorace distincte latioribus, tenuiter striatis, striis punctatis, interstitio tertio tripunctato; carinula basali sinuata, ad humerum denticulo minimo terminata. Corpore subtus ad latera punctulato. Prosterno processu apice haud marginato. Onychidio subtus glabro. Segmento anali in ♀ utrinque bipunctato.

Long. 12·5 mm.

Caucasus: jug. Muchinskij, 9000 pedes, vi.1915 (*N. Bogdanov-Katjkov*).

Species *P. astutus*, Tschitsch., affinis, a quo differt forma corporis latiore, thorace breviore, magis rotundato, lateribus postice fortiter sinuato.

A SECOND SPECIES OF *CURUPIRA* FOUND IN THE TRANSVAAL (DIPTERA, BLEPHAROCERIDAE)

By F. W. Edwards, M.A., Sc.D., F.R.E.S.
(*British Museum, Natural History.*)

In a recent paper * I described under the name *Curupira* (*Elporia*) *flavopicta* a Blepharocerid fly discovered by Dr. B. de Meillon in the northern Transvaal. While the description of *C. flavopicta* was passing through the press Dr. de Meillon sent material of a second species which he had in the meantime discovered in the same stream. This second species, like the first, is not only new to science, but exhibits several points of unusual interest: it is described below under the name *C. hystrix*, sp. n.

In the paper quoted I pointed out that the South African Blepharoceridae, all of which are referred at present to the subgenus *Elporia* of *Curupira*, may be placed in two distinct groups, typified by *C. barnardi* and *C. capensis*; the first species found by Dr. de Meillon is clearly related to *C. capensis*, but the new species resembles *C. barnardi* in having the eyes of the male larger than those of the female, the maxillary palpi 4-segmented in both sexes, and the wing-membrane with distinct microtrichia. On the other hand *C. hystrix* differs from *C. barnardi* as well as from the other three African species at present known in the practically contiguous eyes and the form of the front femur of the male, and in the remarkable armature of " porcupine-like " spines of the larva. In regard to the eyes, *C. hystrix* resembles the South American *C.* (*E.*) *elnorae*, Edw., although the latter has a wing-membrane of the type of *C. capensis* and is thus intermediate between the two South African groups. The large spines of the larva of *C. hystrix* are paralleled in the Brazilian *C. horrens*, Lutz, and it is of interest to note a similar range of types in the larvae of the South American and South African species of the genus. As has been pointed out by Hora and other writers, increase in the size of chitinous structures in the larvae is found in those species which live in specially rapid waters or at the bases of falls, and in this connection Dr. de Meillon's notes on the habitat of *C. hystrix* are interesting.

Both *C. flavopicta* and *C. hystrix* have thirteen antennal segments, a number which is not found in the three Cape species. This fact must, however, be regarded more as a coincidence than as evidence of the close relationship of the two Transvaal species, because the other adult features indicate that they belong to two different groups of the subgenus.

Curupira flavopicta, Edwards.

Although a few specimens of this species were taken by Dr. de Meillon in company with *C. hystrix* at the foot of Debegene Falls, the main habitat of the larvae of *C. flavopicta* was on stones in the rapids below the falls. This species has not previously been figured, and figures of the larvae (figs. 1 & 2) are herewith given for comparison with the new species. The very unusual form of the pupa of *C. flavopicta* is also illustrated. In small larvae (third stage) the yellow spots are much as in the larger larvae, but the general colour is darker.

Curupira (Elporia) hystrix, sp. n.

Male (dissected from pupa).—*Eyes* very large and practically contiguous, the line separating them narrower (at its narrowest point) than the diameter of one facet; upper

* *Ann. Mag. Nat. Hist.* (10), **10**: 597 (Dec. 1932).

division much larger than the lower and composed of considerably larger facets. Ocellar tubercle very prominent. Pubescence of eyes short, hardly longer than width of one

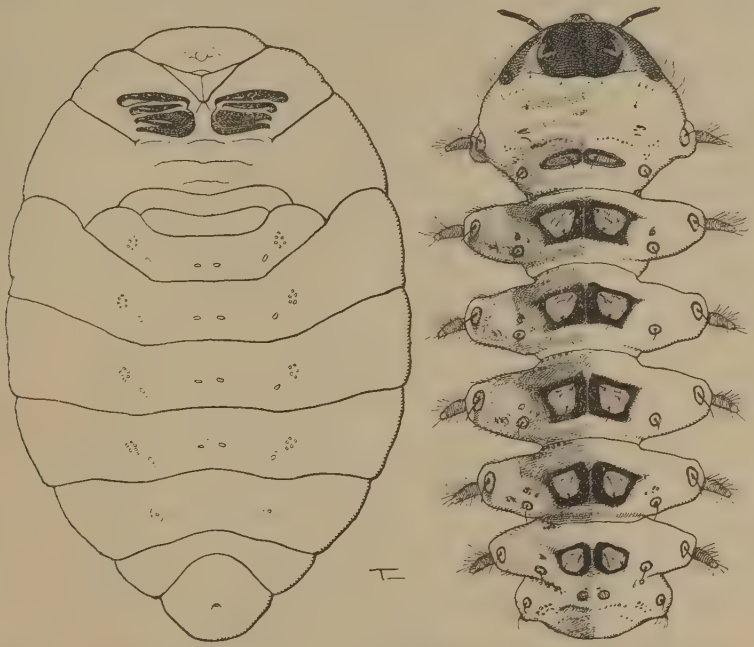


Fig. 1.—*Curupira flavopicta*, Edw. Pupa and fourth-stage larva (former slightly more enlarged; shading omitted from right side of larva).

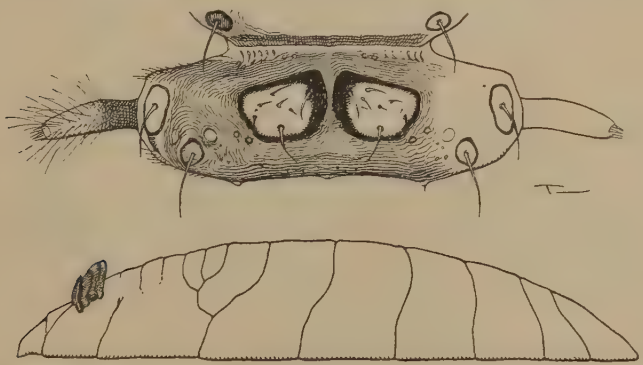


Fig. 2.—*Curupira flavopicta*, Edw. Pupa in side view, and middle body-segment of third-stage larva.

facet. *Mouth-parts* longer than head (as in *C. barnardi*). Mandibles present but minute. Labrum finely fringed at tip. Maxillary palpi slender, 4-segmented (apart from the enlarged basal portion), proportionate lengths of segments 10 : 4 : 4 : 8, second segment without

obvious sense-organ, fourth with several constrictions. Blade of maxilla reaching to end of second palpal segment. No spinules on inner side of labial palpi. *Antennae* short, 13-segmented, second segment the longest, flagellar segments (except first) rounded, last rather smaller and sometimes fused with penultimate. *Hypopygium* much resembling that of *C. barnardi* in structure, with broad styles and with tubular parameres which are much stouter and one-third longer than the three penis-filaments. Vesica small, much smaller than in the other South African species. *Legs:* front femora slender on basal two-thirds or more, with a rather conspicuous swelling just before the tip; a regular row of short stiff bristles along the greater part of their length ventrally, rather more numerous on the swollen portion. Middle and hind femora not swollen near tip and with fine hairs only (no stiff bristles). Spur of hind tibia longer than tibial diameter. First segment of front tarsi almost as long as tibia, of other tarsi relatively shorter; hind tarsi much thicker than the others and more densely covered with microscopic hairs, joints not darkened. Claws all alike, long, but less slender than in *C. barnardi*, pubescent beneath on basal half, but without spines. *Wings* as in *C. barnardi*, except that anal angle is rather less obtuse; *R*5 bare; * *An* reaching more than half-way across anal cell.

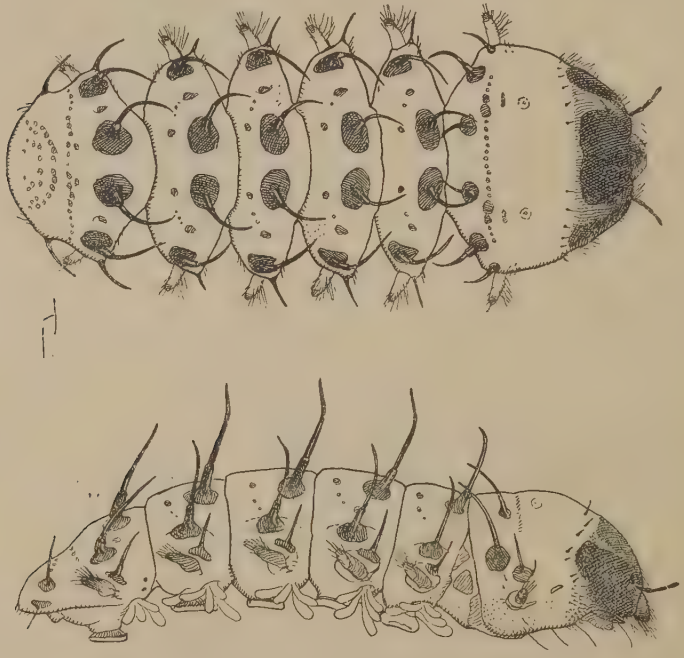


Fig. 3.—*Curupira hystrix*, sp. n. Larva (probably fourth-stage, but not fully grown), dorsal and lateral view.

Female (dissected from pupa).—*Eyes* widely separated, divided into two parts, but upper division very small, composed of only 30–35 facets which are slightly smaller than those of the main lower division. *Mouth-parts* resembling those of ♂, but mandibles fairly well developed, half as long as labrum, with the extreme tip slightly bifid and finely toothed;

* *C. spinulosa* is distinguished from the other African species in having rather numerous macrotrichia on vein *R*5, a feature which was not noticed at the time of description.

labrum bare at tip; labial palpi with a few spinules on inner side. *Antennae* as in ♂. *Hypopygium* much as in the other species; three chitinised spermathecae as usual. *Legs:* front femora with the distal half or more rather strongly swollen, but without short bristles beneath. Hind tibial spur as in ♂. Front tarsi shorter than in ♂; hind tarsi not stouter than the anterior pairs; all tarsal joints rather conspicuously darkened; last tarsal segment on front and middle legs wholly dark, on hind legs with its basal half pale. Claws stouter than in ♂ and almost or quite bare. *Wings* as in ♂.

Pupa.—Resembles that of *C. barnardi* in shape, the portion in front of the respiratory horns descending steeply and the horns high and pointed; differs from *C. barnardi* and *C. spinulosa* in having the respiratory horns somewhat larger, the inner pair of lamellae in each horn being as large and almost as strongly chitinised as the outer pair, whereas in the other two species they are smaller and more delicate and often hidden between the approximated outer lamellae; differs also from the two species mentioned in having the minute chitinous discs of the integument very much coarser and denser, more so even than in *C. flavopicta*, a patch of these discs being present on the thorax behind each respiratory horn.

Larva (fourth stage).*—Remarkable for the enormously developed spines on the dorsum of the abdomen, and also for the fact that the antennae have three distinct segments, this latter feature distinguishing the fourth-stage larva of *C. hystrix* from all others hitherto known in the subfamily Paltostominae. Colour when mature uniformly dark. Each body-division with four very long and strong black spines, each spine set in a large chitinous base which is produced into a stout black tubercle approximately one-third as long as the spine which is articulated to it; these four spines represent the anterior and outer-posterior pairs of spines of other African species, the inner-posterior pair in *C. hystrix* remaining very small (about as in *C. capensis*). In addition to the four main spines each body-division carries a strong lateral spine (immediately above the base of each lateral process) which is about half as long as the other spines. Anal division with a small lateral tubercle bearing a strong spine which is directed more or less anteriorly. Apart from these main spines the integument is almost smooth, a few small spinules being present on the sides of each body-division in front of the lateral spine. Lateral processes with long hair above and with a tuft of shorter hair at tip, but without spines. Gilt-tufts 5-branched, as in the other species. Average length about 6 mm.

Small larvae (third stage?) differ in having the antennae only 2-segmented; the dorsal spines are about as long as in the full-grown larva, but the lateral spine on the anal division is much shorter.

Transvaal: Debegene Falls, 3261 ft., Magoeba's Kloof, Tzaneen, about 20 pupae and 30 larvae, in company with a few *C. flavopicta*, 16.x.1932; The Sawmill, Magoeba's Kloof, 4000 ft., about 40 pupae and 20 larvae, also some adults (7 ♂♂ 2 ♀♀) flying up and down face of falls, 26.ii.1933 (*B. de Meillon*). 4 ♂♂ 4 ♀♀ dissected from pupae.

The collector writes: "The larvae and pupae were found attached to the face of the rock under the falls. There is a very heavy rush of water. They did not occur lower down among stones where *C.* (*E.*) *flavopicta* is usually found."

The captured adults are velvety-black in colour, without definite markings on thorax, but with dull grey basal lateral triangular patches on the abdominal tergites; antennae, mouth-parts, legs and halteres black, the four anterior legs less dark and femora somewhat pale at base; wings hyaline.

* I am not certain that all the larvae with 3-segmented antennae belong to the fourth stage; some examples are much smaller and appear to have longer and more pointed spines, and though these are probably newly-moulted fourth-stage larvae it is possible that they may be third-stage specimens. Possibly the shorter spines of the fully-grown larvae may be due to their being worn down with age.

SYNONYMISCHE UND ANDERE BEMERKUNGEN ÜBER CROTCH'SCHE COCCINELLIDEN-TYPEN

Von R. Korschefsky.

(*Berlin.*)

(Mit 7 Textfiguren.)

Durch die Liebenswürdigkeit des Herrn Kollegen Kerrich, Cambridge, bin ich in den Stand gesetzt worden, die nachfolgenden Crotch'schen Typen zu untersuchen. Für das freundliche Entgegenkommen möchte ich auch an dieser Stelle meinen Dank aussprechen.

1. *Epilachna zeylanica*, Cr. (Revis. Cocc. 1874, p. 83) ist äusserst nahe mit *fallax*, Ws. (1908, Stettin. Ent. Ztg., **69 :** 219) verwandt. Obwohl diese Art bisher von Britisch Indien nicht bekannt geworden ist, ist es auch andererseits möglich, dass die Type eine falsche Patria-Angabe trägt oder dass sie nach Ceylon eingeschleppt wurde.

   Der Typus ist stark abgerieben und tarsenlos, sodass ein Vergleich nicht restlos vorgenommen werden kann. Die Makeln sind etwas grösser, und die Grundfarbe der Elytren ist intensiver rot. Länge 4,2 mm. Das kleinste mir vorliegende Exemplar von *fallax*, Ws., (Borneo) misst 4,8 mm. Sollten weitere Exemplare von *zeylanica*, Cr., auf Ceylon gefunden werden, müsste es sich herausstellen, ob *fallax* im Rassenverhältnis steht oder synonym ist.
2. Der Typus von *Epilachna moultoni*, Cr., wurde von Neu-Caledonien beschrieben. Zu dieser Art liegen mir nun mehrere Exemplare aus dem Museum Bremen vor, welche mir in liebenswürdiger Weise von Herrn Alfken zugesandt wurden und welche einer neuen Rasse angehören. Die Grundfarbe der Elytren ist heller, und die schwarze Zeichnung hebt sich scharf von derselben ab, auch ist die Behaarung schwächer. Das Material stammt von der Station Manus (Admiralitätsinseln). (*L. Cohn*) (Typen in Mus. Bremen und in coll. mea) . . . . . **manusensis,** subsp. n.

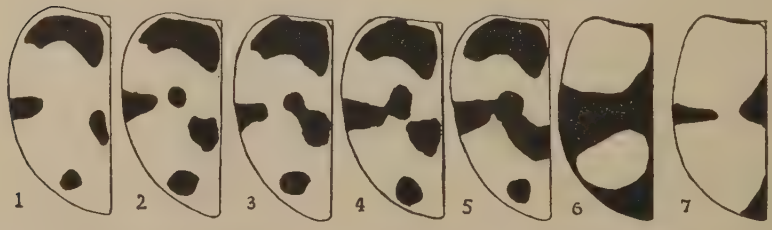


Fig. 1.—Stellt die Nominatform dar, während, figs. 2–5 die Variationsbreite dieser neuen Rasse darstellen. In diesen Formenkreis dürfte auch *Epilachna urvillei*, Montr., einzureihen sein. Doch schreibt Montrouzier : "L'écusson est noir triangulaire," und so vermute ich, dass diese Art eine weitere Rasse ist. Sollte sich meine Vermutung bestätigen, so hätte *urvillei*, Montr., aus Prioritätsgründen als Art zu gelten, und *moultoni*, Cr., und *manusensis*, m., sind ihr unterzuordnen.

Fig. 6.—*Palaeoneis coccinea*, Cr. Fig. 7.—*Palaeoneis coccinea*, subsp. *javana* m.

3. *Coelophora wallacei*, Cr., ist eine echte *Anisolemnia* (*Caria*), welche durch die Längsbinde auf jeder Elytre äusserst auffällig markiert ist.
4. *Chilocorus wallacei*, Cr., ist eine echte *Coelophora*.

5. *Chilocorus substriatus*, Cr., ähnelt in Grösse, Form des Prothorax inclusive der vorgezogenen Seitenlappen sehr der *Ch. australasia*, Ker. Gerade durch diese vorgezogenen Lappen weicht diese Art von den bekannten indomalayischen Arten ab (*politus*, Muls., *melanocephalus*, Muls., und *circumdatus*, Gyllh.). Durch das Vorhandensein von 2 Punktlinien, die durch tief eingestochene, wenig gleichmässige Punkte markiert sind, hebt sich aber diese Art deutlich von den vorgenannten Arten ab. Die Punktlinien beginnen kurz hinter der Basis am Aussenrand und laufen mit diesem ungefähr bis zum dritten Fünftel parallel. Von der Spitze verkleinern sich diese Punkte und bilden dort ein Feld von etwa 20 rotbraunen Fleckchen, wie es auch bei *politus*, Muls., gelegentlich auftritt. Nur sind diese bei ***substriatus*, Cr., grösser. Länge 4,5 mm. Breite 4 mm.**

6. Auf p. 205 seiner Revision errichtete Crotch die Gattung *Palaconeis*, welche er in die Verwandtschaft von *Cryptogonatha* stellt. Von dieser Gattung liegen mir nun 12 Exemplare vor, die der Art *coccinea*, Er., angehören und deutlich die Verwandtschaft mit *Sticholotis* zeigen. Im Habitus erinnern sie auf den ersten Blick an Chrysomeliden. Auch Crotch gibt schon seiner Verwunderung Ausdruck, indem er von einem " extremely anomalous" Genus spricht. *P. coccinea* wurde von Sarawak, Nordwest-Borneo, beschrieben. Meine Exemplare dagegen wurden alle auf Java von Drescher gesammelt. Semarang, März 1906, Dezember 1903, Februar 1904 und Mai 1907. Merbaboe Tjilatjap, Februar 1910. Ein weiteres Exemplar sah ich in der Ausbeute des Herrn Prof. Handschin mit der Patria-Angabe: Pontjap, Java, November 1930 (*Handschin*). Alle diese Exemplare unterscheiden sich vom Borneo-Exemplar durch stärkere Aufstellung der Zeichnung, sodass die Elytren je 3 Makeln tragen. Länge 3–4 mm. . . . . **javana,** subsp. n.

Meine Exemplare waren mit einer Etikette von Weise als *Pullolotis nigricollis*, und ist dieser Name *in litt.*

7. *P. australiaca*, Cr. Die zweite Art dieser Gattung ist grösser und breiter. Die Makeln sind gelb.

Dass diese beiden Arten bisher in den meisten Sammlungen nicht vertreten waren, liegt wohl sicher an der grossen Chrysomeliden-Aehnlichkeit.

VARIATIONS IN THE SURFACE PATTERN OF EGGS OF *ANOPHELES MACULIPENNIS* (DIPTERA, CULICIDAE) OBTAINED IN THE SOUTH OF ENGLAND

By J. F. Marshall, M.A., F.R.E.S., and J. Staley, F.R.E.S.

(*British Mosquito Control Institute, Hayling Island.*)

Plates 4 and 5.

During the past few years, the possibility of subdividing the species *Anopheles maculipennis* into distinct races, having different malaria-carrying potentialities, has occupied the attention of many Continental malariologists, notably Roubaud (in France); Van Thiel, Swellengrebel and De Buck (in Holland); and Falleroni (in Italy).

The work of the last-named investigator,[1] who made use of the surface pattern of the eggs and the relative size of their floats for differentiating racial groups, has been continued and greatly extended through the collaboration of Missiroli, Hackett and Martini,[2] who consider that the races of *maculipennis* are separable into two main groups: the eggs of one group having, just distal to the float structures, a pair of dark transverse "bars," and those of the other group being "dappled" with irregular dark patches. The first group is said to comprise two distinct races, namely (1) *A. maculipennis maculipennis*, in which the two transverse bars are isolated upon a silvery grey ground, and (2) *A. maculipennis messeae*, Falleroni, in which the said bars are accompanied by a "rich pattern" of dark irregular patches and bars, on a ground-colour varying from light to dark grey. The second (or "dappled") group is likewise considered to include two distinct races, namely (3) *A. maculipennis atroparvus*, Van Thiel, in which the ground-colour is brown, and (4) *A. maculipennis labranchiae*, Falleroni, in which it is grey.

Of the races thus distinguished, *messeae* is said to breed, for the most part, in fresh water, and *atroparvus* and *labranchiae* in brackish water. According to Missiroli and his colleagues, "the eggs from a single female are always alike, and there is little difficulty in classifying eggs as of one type or another."[7]

So far as we are aware, no evidence of the existence of different *maculipennis* races in Great Britain has yet been advanced. Only two illustrations depicting an egg of *A. maculipennis* appear hitherto to have been published by British workers,[8, 9] neither of which shows any definite surface pattern.

The accompanying photographs of *maculipennis* eggs recently obtained at Hayling Island may therefore be of interest. The circumstances of the case are as follows. In July last, when sweeping for mosquito larvae in a local fresh-water pool (containing masses of *Spirogyra*) we happened to collect a number of *maculipennis* eggs. On examining these in our laboratory, we noticed that a large proportion of them were very conspicuously "barred" and bore a striking resemblance to certain of the illustrations of eggs of the *messeae* race already published by Missiroli and his colleagues.[3] On the following day we not only obtained a further supply of *maculipennis* eggs

Eggs of *Anopheles maculipennis* **(Hayling Island) in which the "barred" type predominates. × 58.**

Eggs of *Anopheles maculipennis* (Hayling Island) in which the "dappled" type predominates. × 58.

from the pool, but also collected, in some adjacent farm buildings, over 70 females of this species, 23 of which subsequently oviposited in the laboratory.

Of the egg-batches thus procured, eight were composed chiefly of the "barred" eggs previously noticed (pl. 4), and six were composed chiefly of non-barred ("dappled") eggs—three of these latter batches corresponding in many respects with certain of the published illustrations relating to the *labranchiae* race (pl. 5).[4] The remaining nine batches were composed of barred and dappled eggs in more or less even proportion. The ground-colour of the eggs in any one batch was either medium or light grey.

The fact that eggs of both the above types were present, to a greater or less extent, in nearly every batch examined appears to rule out the possibility of two distinct races of *maculipennis* being here in evidence. Since both our barred and our dappled types of egg presumably belong to the same race (whatever it may eventually prove to be), their resemblance to the eggs of the *messeae* and *labranchiae* races respectively seems likely to introduce further complications into the racial problem in so far as this country is concerned.

As previously mentioned, not only the surface pattern of *maculipennis* eggs but also the range of variation of their "float index" (*i.e.* the ratio of the overall length of the float to that of the egg) has been utilised for the purpose of racial differentiation—the index being said to attain higher values in the barred-egg races than in the dappled-egg ones. According to Van Thiel, "the float index of the dappled grey eggs is chiefly less than 0·4, whereas that of the barred eggs is chiefly greater than 0·4."[10] Unfortunately, however, this method of racial diagnosis is inapplicable in the case of our Hayling Island specimens, owing to the fact that their float index ranges from 0·28 to 0·50.

Among other characteristics which are believed, by Continental malariologists, to provide racial indications may be mentioned, (*a*) in the *egg*, the number and surface character of the float chambers;[11] (*b*) in the *larva*, the character, number of branches, etc., of certain hairs on the 2nd, 4th and 5th abdominal tergites;[5] (*c*) in the *female adult*, the number of maxillary teeth[12] and the wing length:[13] and (*d*) in the *male adult*, the character (*i.e.* whether sharply-pointed, slightly-pointed, blunt, etc.) of the external claspette-spine of the hypopygium.

With respect to the last-mentioned diagnostic feature, the external claspette-spine is stated to be always sharply-pointed in males of the dappled-egg races, but to be blunt or "slightly-pointed" in a certain proportion of those of the barred-egg races.[6] In a recent examination of the hypopygia of 69 *maculipennis* males obtained in the area here considered (some reared from larvae and others collected as adults) we have found the external claspette-spine to be sharply-pointed, slightly-pointed or definitely blunt in 45, 22 and 2 cases respectively. In this connection it is of particular interest to note that, as long ago as 1920, H. F. Carter (in a description of the male hypopygia of the British Anophelines) referred to and illustrated a blunt external claspette-spine in the case of *Anopheles maculipennis*.[14]

As regards the various other methods of racial diagnosis above enumerated, although we have carefully determined and tabulated the necessary particulars in the case of all specimens (eggs, larvae and adults) collected during the present investigation, the data so far recorded are difficult to correlate with those of Continental workers, and we therefore deem it advisable to delay their

publication until a further supply of local *maculipennis* material has been obtained and examined. In view, however, of the scarcity of illustrative matter relating to *maculipennis* eggs in Great Britain, we venture to hope that the photographs here reproduced, and these brief notes accompanying them, may be of service to entomologists in other parts of the country.

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3. *Ibid.*, Pl. I, figs. b_1–b_5.
4. *Ibid.*, Pl. I, figs. e_1, e_2.
5. *Ibid.*, pp. 43–45.
6. *Ibid.*, pp. 40–42. See also
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ON SOME ADDITIONS TO THE SMINTHURID FAUNA OF AUSTRALIA

By H. Womersley, A.L.S., F.R.E.S.

(Contribution from the South Australian Museum.)

Since my "Preliminary Account of the Collembola-Symphypleona of Australia" (1932, Counc. Sci. Indust. Res., Pamph. **34**) was sent to press, the following new species of Sminthuridae have been discovered in various States of the Commonwealth.

In this paper nine species are added to the list, of which eight are new to science, and a new variety of an indigenous species is also described. With these additions, no fewer than 46 species of Collembola belonging to the suborder Symphypleona are now known to occur in Australia.

I would like to take this opportunity of correcting an error that was overlooked in my previous paper. On page 26 in the last sentence but one of the last paragraph the words "this species" should be deleted and "*B. hortensis*, Fitch" put in their place. In the last sentence of this paragraph "*B. hortensis*" should read "*B. arvalis*."

Family Sminthuridae, Lubbock, 1870.

Genus *Sminthurides*, s. str. Börner, 1906.

Sminthurides signatus (Krausbauer, 1898).

Specimens of both sexes of this European species were obtained by means of the Berlese funnel from leaf-mould brought back from Armadale, W.A., by Prof. G. E. Nicholls in June 1932.

Genus *Arrhopalites*, Börner, 1906.

Arrhopalites adelaidica, sp. n. (Fig. 1.)

Diagnosis: Length 0·8 mm. Colour (in spirit) white with black pigmented eye-patches. Antennae half as long again as the head diagonal. Ratio of antennal segments

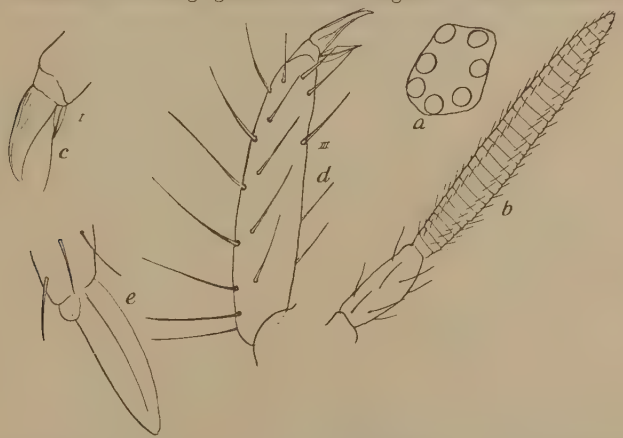


Fig. 1.—*Arrhopalites adelaidica*, sp. n., *a*, ocellar field; *b*, third and fourth antennal segments; *c*, claw and empodial appendage of first leg; *d*, tibiotarsus and claw of third leg; *e*, mucro and apex of dens from side.

I : II : III : IV = 10 : 15 : 20 : 55; IV with 20–25 subdivisions; III without any sign of a peg-like organ. Ocelli 7(8?) on each side. Tibiotarsi without clavate hairs. Claws without teeth. Empodial appendage of anterior feet with long subapical bristle which over-reaches tip of claw; middle and hind feet without this bristle on empodial appendage. Dentes, when released, dorsally concave; dens three times as long as mucro; mucro as long as hind claw, simple without any hook at tip. Clothing of very long and simple setae.

Locality: S. Australia: Glen Osmond, iv.1932 (*D.C.S.*), 2 specimens.
Co-type in South Australian Museum.

This interesting species is very distinct from all other white species of the genus in the number of ocelli.

Genus *Katianna*, Börner, 1906.

Katianna oceanica, Schött, 1917, var. **schötti,** var. n.

Diagnosis: Length 1·25 mm. Colour dirty yellow with a lateral irregular dark streak extending across the face; dorsally with four transverse orange stripes edged anteriorly with fine dark lines; posteriorly are a few irregular dark markings. Antennae dark, the subdivisions of IV marked off by light rings. Antennae rather more than half as long again as the head; ratio of segments I : II : III : IV = 10 : 25 : 30 : 60; IV with 10–12 subdivisions; III typical of genus. Claw with fine but distinct tooth beyond middle of inner edge. Empodial appendage with narrow outer and broad inner angular basal lamella with fine tooth at angle. Empodial appendage of anterior feet with subapical bristle, other feet without. Hind claw as long as mucro. Dens four times as long as mucro; mucro with toothed outer and smooth inner lamella. Female genital appendage fimbriated; arm three-fourths the length of mucro.

Locality: S. Australia: Brown Hill Creek, 5.vi.32 (*D.C.S.*).
Co-type in South Australian Museum.

The morphological characters of this form agree so closely with those of Schött's *K. oceanica* from Queensland that I can but consider it a colour variety.

Katianna mucina, sp. n. (Fig. 2.)

Diagnosis: Length 1·5 mm. Colour bluish-black except ventrally where it is lighter; on thorax are two somewhat darker transverse stripes. Antennae twice as long as head;

Fig. 2.—*Katianna mucina*, sp. n., *a*, antenna; *b*, tip of tibiotarsus and claw of third leg; *c*, female genital appendage; *d*, dens and mucro from side.

ratio of segments I : II : III : IV = 18 : 25 : 35 : 95; III with typical peg-like organ; IV with 10–12 distinct subdivisions, the basal one rather more than twice as long as the

next. Claw with distal inner tooth and indistinct outer sheath which has its inner edge finely serrated. Empodial appendage with broad angular inner basal lamella with a distinct spine at angle and a smaller spine more distal; empodial bristle reaching tip of claw on all feet and slightly clavate. Tibiotarsal clavate hairs 4–5. Mucro one-third length of dens and twice as long as hind claw; both lamellae toothed, the inner more finely than the outer. Clothing of long and strong setae, but these are much finer than in other species of the genus.

Locality: Tasmania: Trevallyn, 17.viii.29 (*V.V.H.*), in moss; Launceston, viii.1929 (*V.V.H.*), in moss.

Co-type in South Australian Museum.

Genus *Parakatianna*, Womersley, 1932.

Parakatianna pulchella, sp. n. (Fig. 3.)

Diagnosis: Length 0·9 mm. Colour yellow with deep orange mottlings. Eye-patches black. Two white spots between the eye-patches which almost touch in middle line. Antennae one and three-quarters length of head; ratio of segments I : II : III : IV =

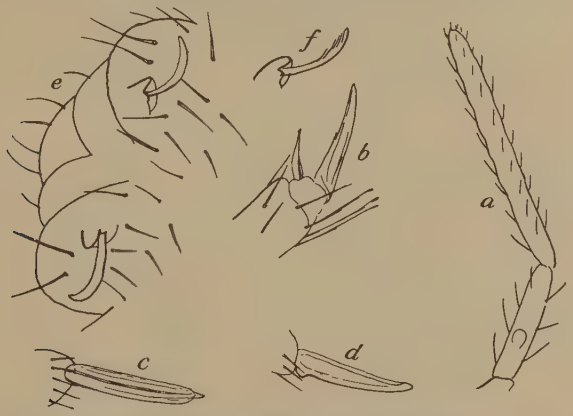


Fig. 3.—*Parakatianna pulchella*, sp. n., *a*, third and fourth segments of antenna; *b*, claw and tip of tibiotarsus of third leg; *c*, mucro, dorsal view; *d*, mucro, lateral view; *e*, anal segments showing genital appendages, from below; *f*, female genital appendage.

1 : 1·5 : 2–2·5 : 4·5–5·5; III with peg-like organ; IV with distal three-quarters subdivided 8–9 times. Claws alike on all feet, with fine inner tooth about the middle. Empodial appendage as in figure 3. Tibiotarsus with 2–3 more or less adjacent clavate hairs. Dens 3½ times as long as mucro, mucro with inner and outer lamellae which finish before the tip leaving a distinctly hooked apex to mucro; inner lamella finely toothed. Mucro twice as long as hind claw. Ocelli 8 on each side. Female genital appendages as in figure 3.

Locality: W. Australia: Bridgetown, ix.1932, on *Acacia pulchella* (*H.G.A.*), 6 spec.

Co-type in South Australian Museum.

Parakatianna splendida, sp. n. (Fig. 4.)

Diagnosis: Length 0·75 mm. Ground-colour white with a greyish tinge, dorsum, antennae and legs red, a broad almost black band runs across the head above the antennae and extends around the back of the vertex leaving vertex itself of the ground-colour, snout

yellowish at tip, anterior part of dorsum black except for a thin cross of red, middle three-quarters of dorsum bright red, posterior part of dorsum black, this black except for a slight break forms a broad lateral streak to join that on the anterior part, in the middle of each side there is an irregular cross-band of black. Antennae twice as long as head: ratio of segments I : II : III : IV = 7 : 15 : 20 : 30; III with normal peg-like organ; V with 12–13 subdivisions. Claws and empodial appendages similar on all feet, simple. Tibiotarsi

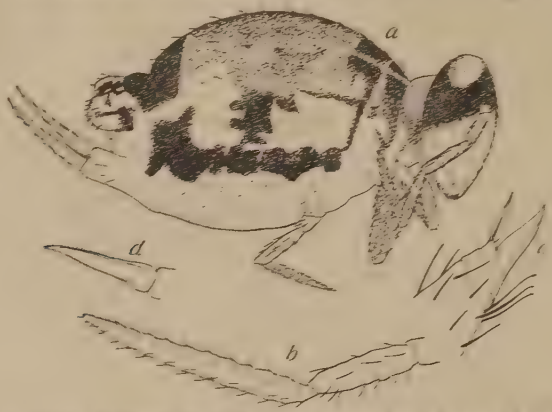


Fig. 4.—*Parakatianna splendida*, sp. n.. *a*, entire insect, lateral view; *b*, third and fourth segments of antenna; *c*, tip of tibiotarsus and claw of third leg; *d*, mucro.

with 3 fine clavate hairs. Hind claw only slightly shorter than mucro. Mucro one-third length of dens. Ocelli 7 ? 8, on each side. Clothing sparse and short.

Locality: Type on Gum blossom, W. Australia: Kalamunda, v.1932. Two other specimens on *Banksia* flowers, W. Australia: Belmont, 17.v.32.

Type in South Australian Museum.

In coloration this is perhaps one of the most striking species of Collembola known.

Parakatianna anomala, sp. n. (Fig. 5.)

Diagnosis: Length 2·0 mm. Colour yellow with dark brown variable markings, sometimes almost black. Antennae dark, legs and furca lighter. Inside of each eye-patch is a yellow spot. Antennae nearly twice as long as head; ratio of segments I : II : III : IV = 5 : 12 : 13 : 27; setae of uniform length, fine and normal; III without peg-like organ; IV with 10–12 subdivisions. Claws with unitus and median inner tooth. Tibiotarsus with 4–5 clavate hairs. Empodial appendage ⅔ the length of claw with angular inner lamella and terminal bristle reaching beyond tip of claw, alike on all feet. Ratio of manubrium : dens : mucro = 20 : 20 : 8; mucro with toothed inner lamella, mucro one-third as long again as the hind claw. Female genital appendage not fimbriated and half the length of mucro. Clothing on anterior part of dorsum consisting of many short spines, posteriorly of normal fine setae except around the pair of protuberances on each side of abdomen IV, where they are longer and stronger and spine-like.

Localities: Co-types in grass sweepings and fungi. S. Australia: Bridgewater, 6.vi.1932 (*D.C.S.*); W. Australia: Armadale, 8.viii.1932 (*H.W.*); Albany, 7.vii.1932 (*H.W.*).

Co-type in South Australian Museum.

This species is somewhat anomalous in that it lacks the peg-like organ on the third antennal segment. It is therefore questionable as to how far this character can be considered generic. It occurs in all known species of *Katianna*, all but the above of *Parakatianna*, and is found in a single species of *Arrhopalites* (*A. drummondi*, Wom.) from Victoria.

Fig. 5.—*Parakatianna anomala*, sp. n., *a*, entire insect, lateral view; *b*, third and fourth antennal segments; *c*, setae on anterior part of dorsum; *d*, posterior portion of dorsum showing tubercle; *e*, tip of tibiotarsus and claw of third leg; *f*, dens and mucro; *g*, female genital appendage.

Genus *Deuterosminthurus*, s. str. Börner, 1906.

Deuterosminthurus sigmoides, sp. n. (Fig. 6.)

Diagnosis: Length 1·8 mm. Colour dark brownish with irregular darker markings. Antennae III and IV bluish. Eye-patches black. Ratio of antennal segments I : II : III : IV = 15 : 30 : 52 : 160; III swollen at about one-third from apex and with a long stout *sigma*-shaped seta; IV with about 40 subdivisions. Antennal setae short and fine. Antennal organ III normal. Tibiotarsus with several stout clavate hairs which reach to half the length of claw. Claws similar on all feet without tunica or inner tooth. Hind claw $\frac{2}{3}$ length of mucro. Empodial appendage simple and reaching to $\frac{3}{4}$ length of claw. Furca long; ratio of dens to mucro = 3·5 : 1, mucro with broad simple inner lamella. Body setae normal.

Locality: W. Australia: Armadale, 6.viii.1932 (*H.W.*).
Type in the South Australian Museum.

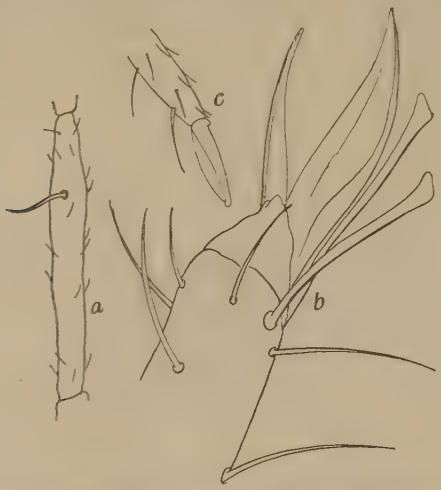


Fig. 6.—*Deuterosminthurus sigmoides*, sp. n., *a*, third antennal segment; *b*, tip of tibiotarsus and claw of third leg; *c*, mucro and tip of dens.

Genus *Sminthurus* (Latreille 1804), Börner, 1906.

Sminthurus elegans, sp. n. (Fig. 7.)

Diagnosis: Length 0·8 mm. Colour yellowish with fine delicate irregular markings, especially on sides, of purple. Antennae annulated with purple and white. Legs purple and also a little purple on furca. Antennae twice as long as body; ratio of segments I : II : III : IV = 5 : 7 : 15 : 68; IV with 36–40 subdivisions; III with longer and stronger setae on basal half, antennal organ III as in figure 7 *b*. Claws alike on all feet, with medial inner tooth and outer tunica. Empodial appendage with long subapical bristle over reaching tip of claw. Tibiotarsus without clavate hairs. Ratio of dens to mucro = 17 : 5, ratio of hind claw to mucro = $3\frac{1}{2}$: 5. Clothing of normal fine setae. Mucronal bristle present.

Locality: In leaf mould. Victoria: Kalorama, Mt. Dandenong. 17.v.1932 (*Miss J. R.*).
Type in South Australian Museum.

Genus *Dicyrtomina*, Börner, 1906.

Dicyrtomina tuberculata, sp. n. (Fig. 8.)

Diagnosis: Length 1·5 mm. Ground-colour yellowish with irregular dark brown markings as in figure 8 *a*, antennae brown. Antennae twice as long as head, ratio of segments I : II : III : IV = 15 : 60 : 70 : 15, III and IV not annulated. Ocelli 8 ? on black patch. Claw much as in other species of genus (cf. fig.). Empodial appendage with pronounced tooth on inner lamella and apical bristle. Clavate tibiotarsal hairs absent. Mucro one-third as long as dens and half as long as hind claw. Dental setae serrated at their base. Clothing of few slightly curved setae on anterior part of abdomen, straighter and stouter but not longer on posterior part. There are a few straight spines between the eyes. In the middle of the dorsum is a pair of characteristic tubercles each of which bears a long straight sensory hair (fig. 8 *e*).

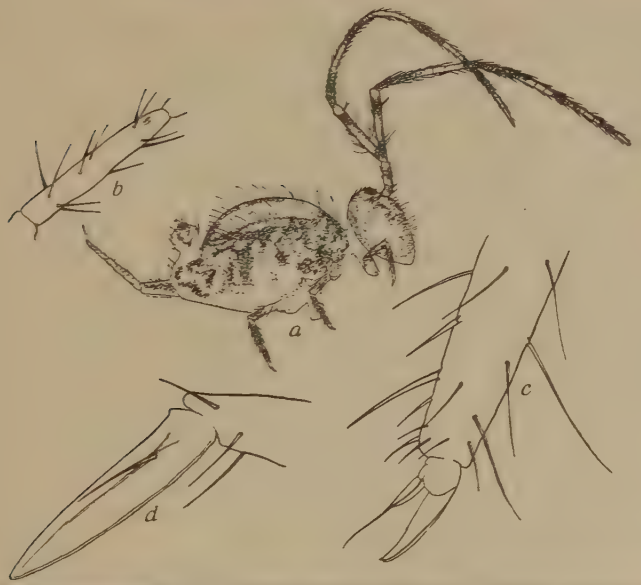


FIG. 7.—*Sminthurus elegans*, sp. n.. *a*, entire insect, lateral view; *b*, third antennal segment; *c*, tip of tibiotarsus and claw of third leg; *d*, mucro and apex of dens.

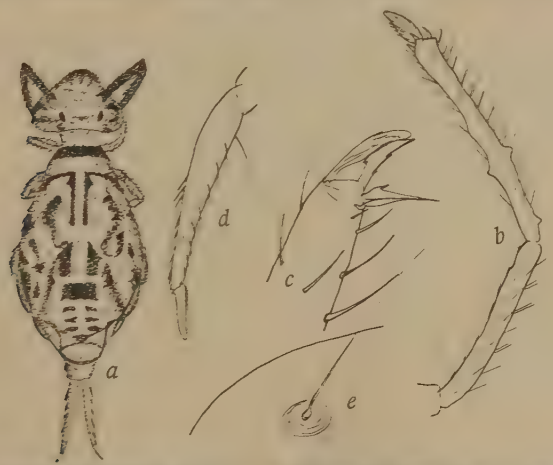


FIG. 8.—*Dicyrtomina tuberculata*, sp. n.. *a*, entire insect, dorsal view; *b*, antenna; *c*, tip of tibiotarsus and claw of third leg; *d*, dens and mucro from side; *e*, dorsal tubercle and sensory hair.

Locality: Co-types in grass sweepings, S. AUSTRALIA: Brown Hill Creek, 26.vi.1932 (*D.C.S.*); others, W. AUSTRALIA: Armadale. 6.viii.1932 (*H.W.*). In moss, TASMANIA: Launceston, viii.1932 (*V.V.H.*). Under stones, TASMANIA: Mt. Nelson, ix.1932 (*V.V.H.*).

Co-type in South Australian Museum.

KEYS TO SOME INDIAN GENERA OF CARABIDAE (COL.) III. GENUS *PHLOEOZETEUS*

By H. E. Andrewes, F.R.E.S.

1(6). Head and prothorax conspicuously punctate; elytra ferruginous, with some dark apical marking other than a triangular patch.

2(3). Head and prothorax finely punctate-strigose, the front nearly smooth; elytra with a common subquadrate transverse piceous patch on the apical half; the elytral intervals strongly convex on disk; claw joint with four teeth on each part. Length about 5·75 mm. *mahratta*, sp. n.

3(2). Head and prothorax punctate, but hardly strigose, the front hardly smoother than the rest of the surface; elytra ferruginous, the apex either wholly dark or vaguely clouded; the elytral intervals only slightly convex on disk; claw joint with 5 teeth on each part. Length 7–7·5 mm.

4(5). Head and prothorax very finely punctate, the punctures not confluent; prothorax with rounded basal foveae; elytra ferruginous, the apical two-fifths piceous . . . . . *bashahricus*, sp. n.

5(4). Head and prothorax more coarsely punctate, the punctures occasionally confluent; prothorax without evident basal foveae (other than the extremities of the hind transverse impression); elytra ferruginous, with a vague dark cloud on the apical half . . . . *squalidus*, sp. n.

6(1). Head and prothorax finely and rather sparsely punctate-strigose; elytra ferruginous, with a common triangular piceous patch on the apical half. Length about 5·75 mm. . . . . *indicus*, sp. n.

Phloeozeteus mahratta, sp. n.

Length : 5·25–6·25 mm.

Colour mainly ferruginous : head, disk of prothorax (sometimes), a common transverse apical spot on the elytra, apical joints of antennae, and tarsi more or less piceous. The elytral spot is subquadrate, covering the 5 or 6 inner intervals, sometimes with a slight outward extension behind.

Head with rather shallow, uneven, frontal furrows, a slight pore on vertex, some vague striation near eyes, surface conspicuously and fairly closely punctate, the punctures sometimes a little confluent, nearly smooth in front, eyes large and prominent, antennae reaching basal fifth of elytra, mentum with a strong tooth in the emargination. *Prothorax* convex, almost semicircular, but truncate at apex, a third wider than head, two-thirds wider than long, hardly contracted behind, so that the base, which is produced backwards at middle, is nearly twice as wide as apex, sides bisetose, explanate, widely behind, the hind lateral pore making a slight indentation in the border just in front of the angle, which is right, but not very sharp, and reflexed; median line, and transverse impressions well marked, the hind impression interrupted at middle, basal foveae obsolete, surface irregularly and very variably punctate-strigose. *Elytra* rather flat, subquadrate, though with gently rounded sides, two-thirds wider than prothorax, rather more than a third longer than wide, border microscopically setulose, extending inwards to a point opposite stria 4, apex truncate; striae moderately deep, finely and vaguely crenulate, 1 and 2 arising in an umbilicate pore, a scutellary striole present; intervals moderately convex, 7 narrower than the rest and subcostate on basal half, 3 dorsal pores on 3, pores of the marginal series few and large, surface impunctate. Microsculpture conspicuous and coarse throughout, formed by isodiametric meshes. Metasternum and venter sparsely punctate and pubescent; apical segment of venter with two marginal setae on each side; metepisterna very long and narrow; claws with four teeth on each part, which decrease in length from apex to base.

Bombay: Belgaum (*H. E. Andrewes*), 12 ex.; North Kanara (*T. R. D. Bell*), 2 ex. My note runs "I took this species in considerable numbers in Dec. 1886 on a Jambul tree in my own compound, Belgaum. They were under the bark and mostly close to the ground, though occasionally at a height of five or six feet, and owing to their extreme agility were difficult to take."

Phloeozeteus bashahrieus, sp. n.

A little larger than *P. mahratta* (7 mm. long), but similar in colour, apart from the elytra, of which the apical two-fifths are piceous, the dark colour extending a little further forward in the middle than at the sides.

Head a little wider, quite as closely but more evenly punctate, including the front, the punctures all distinct and not confluent, with only a vestige of a pore on the vertex. *Prothorax* evidently narrower, only a fifth wider than head and less than a half wider than long, slightly more contracted behind, sides less explanate, hind angles sharply rectangular, with a similar slight indentation just in front of them, normal impressions less deep, but here there are fairly deep, rounded, basal *foveae*, the surface, like that of the head, covered with fine, closely placed, separate punctures. *Elytra* with the sides a little more rounded, the striae shallower, the intervals less convex in front and quite flat behind, 7 relatively wider and not costate, the surface duller and with traces of fine punctuation, the meshes of the microsculpture a little finer. On each part of the claw-joint there are 5 small teeth.

Bashahr: Poo, 2 ex., for which I am indebted to Mr. M. Bänninger and Dr. G. Hauser respectively.

Phloeozeteus squalidus, sp. n.

Larger than *P. mahratta* (7·5 mm. long), the head and prothorax (except the explanate margins) piceous, a vague dark cloud on the apical half of the elytra.

Head equally closely and more coarsely punctate, the punctures occasionally confluent, a little smaller but hardly fewer on the front, no impression on vertex. *Prothorax* only a half wider than long and evidently, though slightly, contracted behind, sides a little less explanate, the hind lateral pore hardly breaking the outline, the median line deep on the disk and behind, front transverse impression shallow, hind one only moderately deep, the surface closely and more coarsely punctate, like that of the head, the punctures here and there confluent, a slight raised area on each side near the hind angles, but smaller than in *indicus*, almost tuberculiform. *Elytra* very similar, with nearly parallel sides, intervals a little flatter, 7 hardly wider, but not costate, the dorsal pores less conspicuous. Microsculpture similar, but formed by smaller meshes. Each part of the claw-joint has 5 teeth, fairly long towards apex, but decreasing in length towards base.

Chota Nagpur: Nowatoli (*Cardon*), viii–ix.1896, 1 ex. for which I have to thank Mr. René Oberthür.

Phloeozeteus indicus, sp. n.

About the same size as *P. mahratta* and similarly coloured, but the piceous elytral spot is wider behind and is produced in front to a point on the suture, so that it is triangular in shape, instead of subquadrate.

Head nearly similar, but the pore on the vertex is obsolete, and the surface is rather more finely and much less closely punctate, with a few striae on each side near eyes. *Prothorax* of nearly similar shape, the sides parallel behind and more sharply rounded in front, the hind lateral pore hardly making any indentation in the outline, the median line equally deep, but the transverse impressions, especially the front one, shallower, the surface more

finely and sparsely punctate-strigose, a slight raised area within and at a little distance from the hind angles. *Elytra* differing in very little, the sides a little more rounded and the apex more obliquely truncate, the intervals slightly flatter, the dorsal pores less conspicuous. Microsculpture similar, but formed by rather smaller meshes.

CHOTA NAGPUR: Nowagoli (*Cardon*), viii.–ix.1896, 3 ex. presented to me some years ago by Mr. René Oberthür.

SOME NEW PHYTOPHAGA FROM AFRICA

By G. E. BRYANT, F.R.E.S.

(*Entomological Assistant, Imperial Institute of Entomology.*)

Family ECMOLPIDAE.

Eryxia ritchiei, sp. n. (Fig. 1.)

Elongate subcylindrical, obscure cupreo-aeneous, the labrum, antennae and legs rufous, the whole body clothed with adpressed fuscous and griseous scales. L. 6 mm.

FIG. 1.—*Eryxia ritchiei*, sp. n.

Head with the eyes not quite as broad as the prothorax, clothed with mixed fuscous and griseous scales, the labrum rufous. Antennae rufous, extending to the middle of the elytra; the first joint short and broad, clothed with long grey pubescence; the second joint about half as long as the first, and less pubescent; the third about equal to the first; the fourth to the seventh about equal to each other, each a little longer than the third; the four terminal joints each shorter than the seventh, and with finer pubescence. Prothorax slightly broader than long, strongly punctured, the sides rounded, and clothed with stout fuscous and griseous scales, which form two darker median longitudinal stripes, divided by a vague lighter stripe, the scales at the sides mixed. Scutellum subtriangular, clothed with fuscous and griseous scales. Elytra a little broader than the base of the prothorax, the sides parallel and rounded to the apex, strongly punctured and clothed with stout fuscous and griseous scales, which form an ill-defined pattern, two longitudinal dark lines at the base near the suture not extending to the middle, and a dark patch near the apex. Legs rufous, clothed with griseous scales. Underside entirely clothed with griseous scales,

the ventral segments about equal to each other; in the ♂ the third and fourth are more contracted in the middle.

Tanganyika Territory: Kahama, 1.x.1926 (*A. H. Ritchie*). Feeding on the flowers of Npogoro.

Type in the British Museum.

Closely allied to *E. holosericea*, Klug (= *baikii*, Baly), but larger and the scales coarser, and forming a more defined pattern.

Syagrus puncticollis, sp. n. (Fig. 2.)

Oblong testaceous, with the base of the head black, a transverse median black patch and the sides of the prothorax black; base of the elytra with black markings, and an irregular transverse black pattern behind the middle; the basal half of the side margins black; sternum black; head and prothorax strongly punctured, the elytra punctate-striate. L. 3·5 mm.

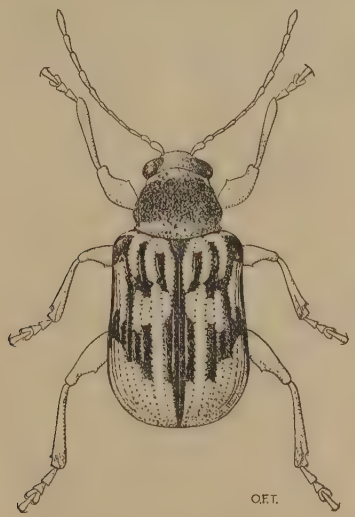


Fig. 2.—*Syagrus puncticollis*, sp. n.

Head testaceous, with the basal portion black, strongly punctured, almost impunctate between the eyes, with the exception of a longitudinal row of punctures; clypeus strongly punctured. Antennae flavous, long and slender, extending beyond the middle of the elytra; the second and third joints about equal and each shorter than the fourth; the fourth and remaining joints about equal to each other; the five terminal joints slightly more pubescent and thickened. Prothorax with very deep irregular punctures, the base with a row of smaller regular punctures, testaceous, with a broad transverse median black patch, the side margins black, the sides rounded and slightly contracted in front, the basal angles strongly produced. Scutellum testaceous, impunctate, subtriangular. Elytra oblong, broader at the base than the base of the prothorax, with the apex rounded, strongly punctate-striate; a black patch at the shoulders, a longitudinal black line between the 2nd and 3rd and 4th and 5th striae, not touching the base, and extending less than a third of the length of the elytra, a transverse band behind the middle formed by short irregular connected black lines, and connected to the shoulder patch by a black stripe between the 5th and 6th striae, the lateral

margins with the basal half black. Legs testaceous, a feeble tooth on all the femora. Underside with the sternum black, the ventral segments testaceous, the first segment the longest, the remainder about equal to each other.

Uganda: 24.xi.1929 (*G. H. E. Hopkins*), 1 ex. Sierra Leone: Kanema, 13.v.1923 (*E. Hargreaves*), 2 ex., from Oil Palm.

Type in the British Museum.

Allied in size and structure to *S. minutus*, Jac., but a very distinct species. In marking resembles *Eurydemus maculipennis*, Jac., which should probably be transferred to *Syagrus*. It probably would be better eventually to transfer all the African species of *Eurydemus*, as they have nothing in common with the type of the genus, *E. grandis*, Baly, from New Caledonia. Jacoby has caused great confusion in these two genera.

Eurydemus gossypii, sp. n. (Fig. 3.)

Fulvous, with two black spots on the prothorax and three on each elytron; the apical joints of the antennae tinged with fuscous; head and prothorax strongly punctured; the elytra strongly punctate-striate. L. 2·5 mm.

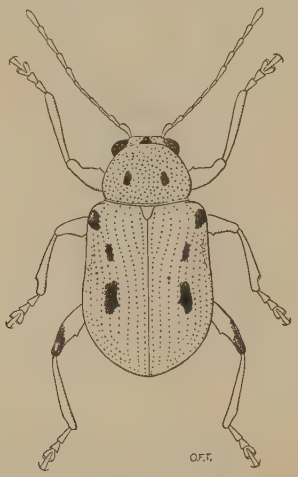


Fig. 3.—*Eurydemus gossypii*, sp. n.

Head fulvous, strongly punctured, the punctures on the clypeus stronger and more regular. Antennae fulvous, with the five apical joints tinged with fuscous, long and slender, extending to the middle of the elytra; all the joints long and slender, the sixth the shortest, the two basal joints slightly more swollen, the five apical joints each broadening to the apex and more pubescent. Prothorax transverse, fulvous, with two small black spots placed between the middle and base, strongly and closely punctured, the sides rounded and contracted in front. Scutellum fulvous, triangular, impunctate. Elytra fulvous, oblong rounded at the apex, strongly punctate-striate, with three black patches on each, one at the shoulder, rounded, the other two elongate (in one specimen joined) touching the sixth stria, one in front of middle and one behind. Legs fulvous, all the femora feebly toothed, the tibiae strongly notched on their outer side at the apex. Underside fulvous; prosternum strongly punctured; ventral segments of the abdomen with short pubescence.

S. Nigeria : Ibadan, 15.viii.1924, on cotton (*F. D. Golding*), 1912 (*Dr. John Currie*); Enugu, 28.ix.1928 (*D. R. Rosevear*).

Type in the British Museum.

Somewhat allied to *E. porosicollis*, Jac., from the Cameroons, but easily distinguished by the sculpture of the prothorax, and its black pattern. The pattern is evidently variable; may have the elytral spots connected, as in the specimens from Enugu, or the two spots on the prothorax may be lacking, or the insect may be entirely fulvous.

Pagria gossypii, sp. n.

Rufous, nitid, beneath fuscous; antennae with the four basal joints flavous, the terminal joints fuscous; legs flavous; prothorax strongly but not closely punctured; elytra punctate-striate. L. 2 mm.

Head rufous, nitid, the basal portion strongly but not closely punctured, the clypeus with a few large irregular punctures. Antennae long and slender, extending almost to the middle of the elytra; the four basal joints flavous, the remainder fuscous; the first two joints more swollen, the third and fourth more slender and about equal to each other, the remainder sparingly clothed with pubescence. Prothorax rufous strongly but not closely punctured, the sides angled a little behind the middle. Scutellum rufous, nitid, triangular, impunctate. Elytra rufous, oblong, rounded at the apex, strongly punctate-striate, more feebly towards the apex, very slightly impressed near the base. Legs flavous, all the femora with a feeble tooth. Underside fuscous, the metasternum nitid, impunctate, the ventral segments with traces of punctures, the first segment about as long as the second and third together, the apical segment rufous.

Nigeria : Ibadan, 19.viii.1925, on cotton (*F. D. Golding*).

Type in the British Museum.

Allied to *P. suturalis*, Lef., but a narrower species and not so strongly impressed at the base of the elytra, less coarsely punctured, and without the black suture, but the pattern and coloration of the elytra is of little importance, as it may be rufous with intermediate stages to blue-black, as is the case in so many genera of the Eumolpidae.

Family Halticidae.

Aphthona whitfieldi, sp. n. (Fig. 4.)

Deep red, shining, the apical joints of the antennae, labrum, palpi and the posterior femora and tibiae piceous; the head and prothorax impunctate; the elytra very feebly punctured. L. 3 mm.

Of broadly ovate shape. Head impunctate, the labrum and palpi piceous. Antennae extending almost to the middle of the elytra; the four basal joints and the basal half of the fifth joint flavous, the remainder piceous; the first joint much longer and stouter than the second, the second, third and fourth about equal to each other, the fifth a little longer than the fourth, the fifth to the tenth about equal to each other, the apical joint a little longer and more slender and pointed. Prothorax not very transverse, the anterior angles very oblique, and the sides feebly margined, the surface impunctate and shining. Scutellum triangular, shining and impunctate. Elytra about twice as long as the prothorax, rounded at the apex, very finely punctured and shining. The front and middle legs flavous, and the hind pair piceous; the hind tibiae very finely serrate, and with a short strong spur at the apex. Underside reddish.

Anglo-Egyptian Sudan : Kadugli, 13.ii.31, on *Vicia sinensis*, Endl. (*F. G. S. Whitfield*).

Type in the British Museum.

A large and robust species allied to *A. senegalensis*, Jac., but differs in its much brighter red colour and more shining appearance, and in the elytra being finely punctured, and the hind tibiae dark.

I have also a good series collected by Dr. G. D. H. Carpenter at Madi, Uganda, v.1927, which differ very slightly from the type in the colour being slightly darker, and the prothorax with slight traces of fine punctures.

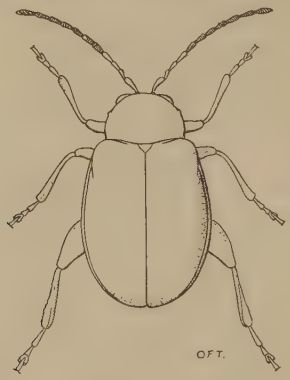


Fig. 4.—*Aphthona whitfieldi*, sp. n.

Family Galerucidae.

Monolepta (Candezea) goldingi, sp. n. (Fig. 5.)

Oblong, with the apex rounded, entirely pale yellowish-green (probably olive-green when alive); eyes prominent; head feebly punctured; antennae long and slender, extending well past the middle of the elytra; prothorax transverse, impunctate; elytra very feebly and closely punctured. L. 4 mm.

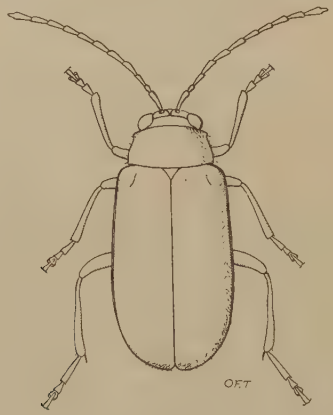


Fig. 5.—*Monolepta goldingi*, sp. n.

Head pale yellowish-green, the clypeus and base of the head feebly punctured, a transverse impression extending across the head behind the insertion of the antennae; eyes large

and prominent. Antennae pale yellowish-green, the four or five terminal joints with the apical portion darker, long and slender, extending well beyond the middle of the elytra; the first joint the longest and the second the shortest, the first about as long as the second and third together; the remainder about equal to each other; the apical joint contracted at the apex and pointed. Prothorax pale yellowish-green, impunctate, transverse, the sides nearly straight, with the anterior angles oblique. Scutellum pale yellowish-green, triangular, impunctate. Elytra pale yellowish-green, oblong, a little broader at the base than the prothorax, nearly four times as long as the prothorax, with the apex rounded, feebly and closely punctured. Legs pale yellowish-green, long and slender, clothed with fine pubescence; the hind tarsi very much longer than the front and middle pair, the first joint very long; the tibiae with a sharp spur at the apex. Underside pale yellowish-green, clothed with very fine pubescence; the ventral segments about equal to each other.

S. Nigeria: Ibadan, 1.v.1929, on wild indigo (*F. D. Golding*).

Type in the British Museum.

Allied to *C. marginata*, Jac., but much smaller and paler, and without the black margin to the elytra.

FOUR NEW SPECIES OF NEMATINE SAWFLIES FROM BRITAIN (HYMENOPTERA SYMPHYTA)

By Robert B. Benson, M.A., F.R.E.S.

Introduction.

The new *Hoplocampa* described in this paper was first recognised some years ago by the Rev. F. D. Morice, who did not describe it, as he thought that some earlier author had possibly done so and that the species had later been mixed in collections with *H. crataegi*, Kl. This seems unlikely, as superficially the species are really very distinct.

The other species that I am describing here as new were first recognised and diagnosed some years ago by my friend Dr. R. C. L. Perkins, F.R.S., who has handed over to me various manuscript notes dealing with them. I have used these notes freely in this paper and I have also been able, through the kindness of Prof. E. B. Poulton, F.R.S., and Prof. G. D. Hale Carpenter, to study various specimens from the Perkins collection which now belongs to the Hope Department, Oxford.

Hoplocampa (Hoplocampa) ariae, sp. n.

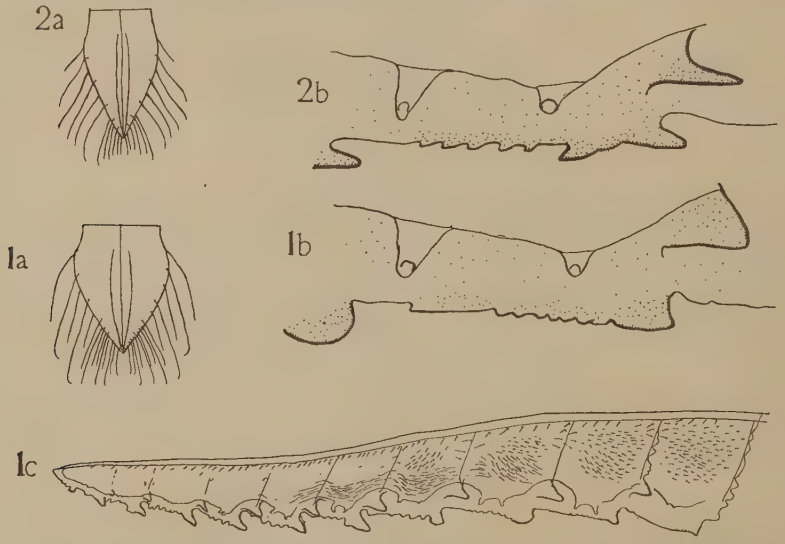
♀. *Colour*: yellow; fuscous are the apex of the mandible, eye, ocellus, antennal segments 3 to 9 above and more or less 1 and 2, more or less the sunken parts of the metanotum and the abdominal tergum 1, the tarsal segments and the distal tip of the tibia of all the legs and the sawsheath distally. Wings with yellowish tinge throughout; stigma, costa and venation yellow. *Length* 5–6·5 mm.; fore-wing 5–6 mm.; antenna 2·5 mm.

Pubescence: with fine sparse hairs except on the hind parts of the mesonotum, on the metanotum and the terga of the abdomen. *Puncturation*: with feeble but regular surface punctures visible on head, but less conspicuous on thorax and dorsum of abdomen. *Head*: clypeus deeply and roundly excised on the front margin; malar space longer than antennal segment 2; median fovea as a rounded depression behind the antennae. *Thorax*: prestermum clearly defined; tarsal claws with a small tooth. *Abdomen*: sawsheath (fig. 1*a*); saw (figs. 1*b* and 1*c*).

♂ as ♀ except in the entirely yellow antenna and in the genital segments; hypopygium rounded distally.

Surrey, Box Hill, 1 ♀ (Holotype), 24.v.1926 (*W. E. China*) (British Museum). Surrey, Guildford, 1 ♂ (Allotype), 4 ♀♀, 1.vi.1918, "on flowers *Pyrus aria*" (*G. C. Champion*) (British Museum). Surrey, north downs near Aldbury, 1 ♀, 2.vi.1921 (*F. D. Morice*) (Hope Department, Oxford). Oxford, Headington, Bayswater Mill, 1 ♀, 29.v.1925 (*A. H. Hamm* Coll.). 1 ♂ (*Dr. Capron*) (Hope Department, Oxford).

This species, the larvae of which almost certainly feed in the fruit of the whitebeam (*Sorbus aria*, Ehrh.), is closely allied to *H. plagiata*, Klug, and *H. crataegi*, Klug, but it can at once be distinguished from these species by its much greater size and the shape of the sawsheath and saw (cf. figs. 1*a* and 2*a*, 1*b* and 2*b*). I found the larvae of what is almost certainly this species feeding in the fruit of whitebeam in various localities near Aldbury in Hertfordshire, Ivinghoe and Chesham in Buckinghamshire in June and July 1933, but have not yet reared the adults. On some trees so great was the infestation that about half the fruits examined were eaten through and many contained larvae. These larvae were very similar to those of *H. crataegi*, Klug.



Figs. 1–2; fig. 1, *Hoplocampa ariae*, sp. n.; 1*a*, sawsheath, viewed from above; 1*b*, tenth tooth from apex of saw; 1*c*, saw, the sculpture and pubescence directed towards the base is on the outer surface while the pubescence directed downwards and towards the apex is on the inner surface of the saw; fig. 2, *H. crataegi*, Klug; 2*a*, sawsheath, viewed from above; 2*b*, tenth tooth from apex of saw.

Amauronematus perkinsi, sp. n.

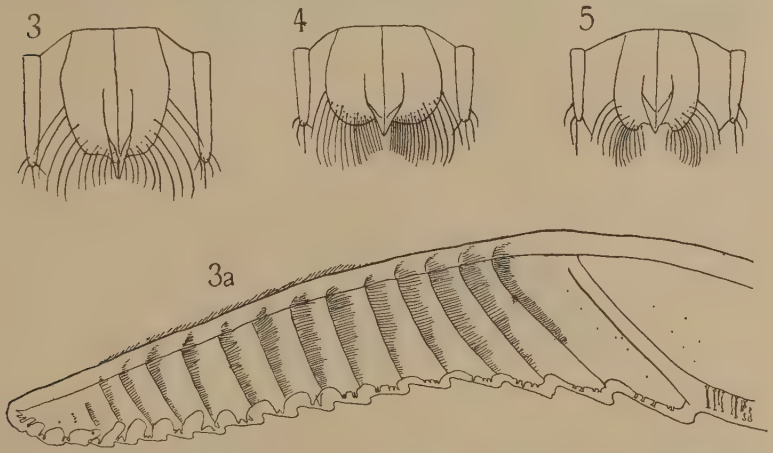
♀. *Colour*: *head*; green fading to yellowish-white on the face; brown above with a black mark joining the three ocelli and connected to the base of each antenna by a black line: *thorax*; brown above, green fading to yellowish-white below; with larger or smaller marks on the three mesonotal lobes, the scutellum behind, most of the metanotum, with small marks on the presternum, the metapleurae and the outer side of the 4 hind tibiae and all the tarsal segments black: *abdomen*; belly green fading to yellowish-white;

tergum 1 black in the middle, yellow at the sides only; terga 2–8 with a black transverse streak in the middle of each, leaving the margins yellow and the sides green fading to yellowish-white; on the apical segment there is no black but only yellow in the middle of the segment with sides green fading to yellowish-white. *Length* 7 to 8 mm.; fore-wing 8 mm.; antenna 4·5 mm.

Head parallel-sided; heavily punctured above; clypeus deeply emarginate on the front margin; antennal segments 3, 4, 5, in the proportions of 10 : 15 : 14 in length; median fovea deep but not connected behind with the frontal basin. *Thorax* heavily punctured, dull. *Abdomen* with the sawsheath slightly contracted behind and at the apex slightly emarginate each side of the middle (fig. 3); saw (fig. 3*a*).

Buckinghamshire, near Halton, 1 ♀ (Holotype), 24.v.1930, " swept from undergrowth in a mixed wood " (*R. B. Benson*) (British Museum). Devonshire, Dartmoor, 1 ♀, bred from larva on *Salix*, 21.iv.19 (*R. C. L. Perkins*) (Hope Department, Oxford). Hampshire, Lyndhurst, 1 ♀, bred from larva on *Salix* (*Miss E. F. Chawner*) (British Museum).

I am naming this species in honour of Dr. R. C. L. Perkins, F.R.S., who discovered it, to commemorate the work he has done on British sawflies and on the genus *Amauronematus* in particular.



Figs. 3, 4 and 5, sawsheaths of *Amauronematus perkinsi*, sp. n., *A. cameroni*, Perkins, and *A. vittatus*, Lep., viewed from above. Fig. 3*a*, saw of *A. perkinsi*, sp. n.; the pubescence and sculpture is only on the outer surface of the saw.

Superficially this species is very close to *A. cameroni*, Perkins, with which it agrees approximately in colour, and both these species would run to *A. vittatus*, Lep., in Enslin's key (pp. 395–6), but these three species can be distinguished by the shape of the sawsheath from above and the arrangement of the hairs on it (figs. 3, 4 and 5 in the present paper). The saws of *A. vittatus*, Lep., and *cameroni*, Perkins, which are similar in general form were figured by Cameron,* but the saw of *A. perkinsi*, sp. n., is very distinct from both of these (see fig. 3*a* in the present paper).

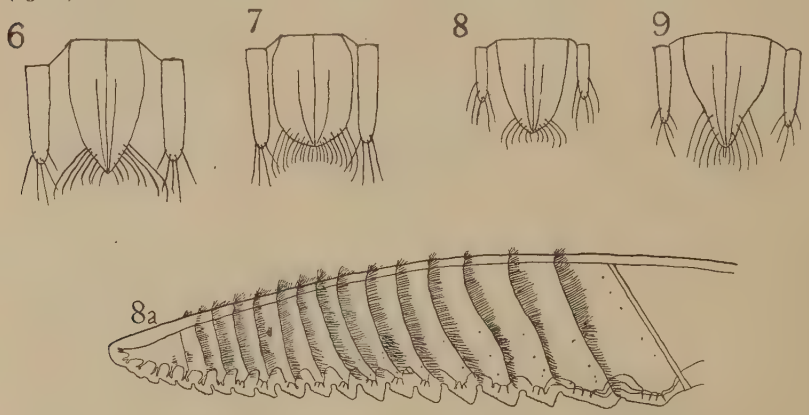
* Cameron, 1884, pl. xviii, fig. 6, for *A. vittatus*, Lep. (= *N. haemorrhoidalis*, Cam.), and pl. xix, fig. 3, for *A. cameroni*, Perkins (= *N. imperfectus*, Zadd., Cam., *nec* Zadd.).

Pteronidea fuscarima, sp. n.

♀. Colour yellow; a spot between the ocelli sometimes extending into the frontal area, the two basal segments of the antenna and more or less the upperside or the whole of the other segments, sometimes one, two or three vittae on the mesonotal lobes, and sometimes the metanotum are black; but even when all the rest of the thorax is pale there are always two dark spots in a groove in front of the cenchri; wings hyaline; stigma costa and neuration yellow, the latter darker at the base of the wing; legs slightly infuscate on outer side of tibiae and tarsi; the abdomen is generally entirely pale but may have a black vitta of variable size down the middle of the dorsum; the sawsheath is tipped with black. *Length* 5–6 mm.; antenna 3–4 mm.; fore-wing 6–6·5 mm.

Puncturation variable; generally the appearance is shiny with superficial surface sculpture generally in the form of small scattered punctures on head, front lobes and postscutellum of mesonotum but is decidedly rugulous on the mesopleurae and abdomen.

Head parallel-sided; clypeus deeply emarginate; segment 3 of antenna shorter than 4 or 5; frontal area very variable, the thick lower margin sometimes broken through as in *P. pavida*, Lep., but in other specimens this is not so at all; sawsheath from above wider and blunter than in *P. flavescens*, Stephens, and the cerci shorter (cf. figs. 8 and 9); saw (fig. 8*a*).*



Figs. 6 and 7, sawsheaths of *Pteronidea leionota*, sp. n., and *P. mima*, Know., viewed from above; figs. 8 and 9, sawsheaths of *Pteronidea fuscarima*, sp. n., and *P. flavescens*, Steph., viewed from above; fig. 8*a*, saw of *P. fuscarima*, sp. n., the pubescence and sculpture is only on the outer surface of the saw.

♂. Colour yellow; black are an area on the vertex of the head spreading behind the temples and over the frontal area, the antennae at least above but sometimes entirely, front of the pronotum, front three lobes of mesonotum either entirely or with a vitta in the middle of each lobe, scutellum sometimes entirely but generally with only a small spot in the middle, metanotum, dorsum of the abdomen more or less (either entirely pale or tergum 9 entirely and the sides and margins of the other terga). *Wings* hyaline; stigma costa and venation yellowish. *Length* 4·5–6 mm.; antenna 4–4·5 mm.; fore-wing 4·5 to 6 mm.

Structure as in ♀ except for genital segments; process of tergum 8 well exserted, not transverse; hypopygium rounded at apex.

Ireland: Wicklow, Devil's Glen: 4 ♀♀ (including Holotype), larva x.1927, bred v.1928, 1 ♂ (Allotype), 4.v.1928. (British Museum.)

* For a figure of the saw of *P. flavescens*, Stephens, see Cameron, 1884, pl. xxiii, fig. 6.

4 ♂♂, 14 ♀♀, larvae ix.1927, bred iv.–v.1928. 3 ♂♂, 4.v.1928. 2 ♀♀, larvae vi.1928, bred vii.1928. 2 ♂♂, 2 ♀♀, 1928. Perkins Collection at the Hope Department, Oxford.

Ireland: Wicklow, Powerscourt, 2 ♂♂, 1 ♀. Perkins Collection at the Hope Department, Oxford.

[The flies in the field and the larvae on *Salix* were collected by A. W. Stelfox, A. A. Lisney and A. M. Gwynn; the larvae were sent to Dr. R. C. L. Perkins, F.R.S., who reared them.]

Scotland: Lanark, Cadder 1 ♀, and 3 ♀♀ (without data). P. Cameron collection in the British Museum.

Larva: the following descriptions of the larva are copied exactly from the manuscript notes of Dr. R. C. L. Perkins, F.R.S.

"*Feeding larva.*

Green, shining, the region of dorsal canal darkish green, the sides, etc., paler, or yellower green.

Head pale testaceous, freckled, tinged with green; eyes black; mouth-parts brown. On the lateral swellings beneath the line of the spiracles there are dark tubercular spots and others (three in a row) on swellings at base of abdominal legs; above the spiracles three or four dots on the abdominal segments · ⁚ · and a little transverse smoky infuscation on a variable number of the segments dorsally, at least on the thoracic ones; legs pale green, cerci black at tips.

Larva ready to form cocoon.

Green, head paler and freckled with testaceous, mouth-parts brown, eye spots black, a number of smoky dots above the base of legs.

Sides of body with three or four blackish dots · . · or · ⁚ · above the lateral swellings, which bear similar dots; slight transverse smoky infuscation on dorsum of more or less of the segments, but it is variable in distribution and extent. Cerci short black, the plate that bears them darkened round the margin."

Pteronidea fuscarima, sp. n., is closely allied to *P. flavescens*, Steph., and *P. seriepunctata*, Malaise. From *P. flavescens*, Steph., females can always be distinguished by the blunt sawsheath, the short cerci and by the presence of black marks in the groove of the metanotum in front of the cenchri. In all these characters, however, it agrees closely with *P. seriepunctata*, Malaise, of Lapland, with which species I at first thought it to be synonymous. Dr. Malaise carefully compared specimens of the new species with his species and told me that they were certainly distinct though closely allied; the saw in the two species is distinct and *P. fuscarima*, sp. n., has a much more deeply roundly excised clypeus, has darker antennae, and has a more developed surface puncturation.

Pteronidea leionota, sp. n.

♀. Colour yellow becoming reddish on dorsal surface of head thorax and abdomen; black are: a spot on the area behind and outside the base of each antenna, a spot in the ocellar region enclosing the three ocelli, the two basal segments and more or less the upperside of the following segments of the antenna, the pronotum in front, a vitta in the middle of each of the side lobes of the mesonotum also the sunken part of these lobes behind, a band on the hind margin of the scutellum together with the postscutellum, the metanotum except at the sides in front, the propleurae more or less, the sutures at the back of the head and separating the

different sclerites of the pleural and sternal parts of the thorax, tergum 1 of the abdomen entirely and more or less the following four, five or six terga in the middle.

Wings hyaline; stigma, costa, and neuration yellowish.

Length 7 mm.; antenna 4·5 mm.; fore-wing 7·5 mm.

Puncturation on head and thorax very sparse almost obsolete; mesonotum and scutellum highly polished, appearing almost oily in fresh and clean specimens.

Head parallel-sided; clypeus deeply excised, frontal area clearly defined, the front wall not broken through to the median fovea; antennal segment 3 considerably shorter than 4 or 5; *abdomen*: sawsheath viewed from above triangular in shape, broad at the base (fig. 6); saw very like the saw of *P. mima*, Know. (Enslin, abb. 105, p. 451), but the emargination between each primary tooth is much deeper.

Devon, Great Haldons, 1 ♀ (Holotype), 18.iv.1926 (*R. C. L. Perkins*). In the British Museum.

2 ♀♀, 18.iv.1926 (*R. C. L. Perkins*). 1 ♀, bred iii.1926 from larva on *Betula*, 6.vii.1924 (*R. C. L. Perkins*). In the Perkins collection at the Hope Department, Oxford.

This species is very close to *P. mima*, Know., and would run to this in Enslin's key, p. 450, but it can easily be separated from that species by the much smoother head and thorax, the absence of a black vitta on the front lobe of the mesonotum and by the more triangular sawsheath when viewed from above (cf. figs. 6 and 7).

I am using the name that was suggested for this species by Dr. R. C. L. Perkins, F.R.S.

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AN ABERRANT NEW ZEALAND BORBORID (DIPTERA, BORBORIDAE)

By John R. Malloch.

In his paper on the Sphaeroceridae (Borboridae) of the Patagonian Region * Mr. O. W. Richards says: "It would have been interesting to compare the South American with the New Zealand fauna. Unfortunately Sphaerocerid flies have scarcely been studied in the latter country." It is true that as Richards states only two species have been recorded, but the lack of information on the family in that country is in large measure due to the recent reduction in facilities for publication of entomological papers there. I had planned to complete the series of papers on the Acalyptrate Diptera of New Zealand begun some years ago by Dr. A. L. Tonnoir and myself, and have material for the purpose and some manuscripts prepared which must await an opportunity for publication either there or somewhere else. However, one or two of the more interesting forms I intend to deal with separately, one having already

* 1931, Dipt. Patag. S. Chile, Brit. Mus. (N.H.) 6, (2) 1931.

been reported upon that belongs apparently to the ANTHOMYZIDAE, and another being the subject of the present paper.

I have had the opportunity to examine much of the material from the Patagonian Region in the United States National Museum, and coupled with the information that I have derived from a perusal of Mr. Richards' report on the collection in the British Museum, I have had provided a basis for the conclusion arrived at that, apart from rather typical forms of the genus *Leptocera* and one widely distributed species of *Copromyza* (sens. lat.), there are no similarities in the Borborid fauna of New Zealand and Patagonia that are not found in other regions also. The genus *Archiborborus*, Duda, in its various ramifications is entirely lacking in New Zealand, and as that is the most characteristic group in South America, it appears worth noting that it does not occur at least in the collection now before me, and as most of the species are quite large it would appear unlikely that they were overlooked by Dr. Tonnoir when he made the rather extensive collection in New Zealand.

There are, however, two species that do appear to justify some critical study, one *Apterina trilineata*, Hutton, and the other the one dealt with below. Of Hutton's species I have one specimen, but leave the matter of its relationships for a future paper.

Protoborborus, gen. n.

This genus is about intermediate between *Copromyza*, Fallén, and *Leptocera*, Olivier. An examination of the wing-venation (fig. 1) will disclose the fact that the subcosta is very

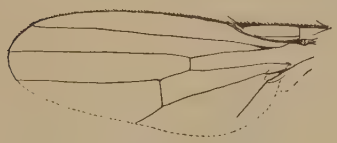

FIG. 1.—Wing of *Protoborborus neozelandicus.*

FIG. 2.—Head in profile of *Protoborborus neozelandicus.*

weak apically and almost fused with the first vein though traceable apically and evidently connected with the costa just before the distinct break; the anal cell is very small, with the vein closing it practically obsolete, and the vein closing the discal cell at its base incomplete. The cephalic characters are also quite distinctive, the profile being as shown in fig. 2, while the frons is uniformly shining and of the same texture throughout, with very minute and generally distributed dark hairs on the central part, the postvertical bristles well developed and cruciate, the four verticals long, the inner pair proximad of a line drawn across the bases of the posterior pair and a short incurved bristle between the bases of the inner and outer bristle on each side, ocellars long and divergent, the frontal orbits each with three bristles, the upper one slightly outwardly curved, the anterior two reclinate. Face with a slight central carina between the bases of the antennae upon which there are some minute hairs; genal bristle present but not very strong. Thorax with 1 + 3 pairs of dorsocentral bristles and usually some irregular acrostichals; scutellum with four marginal bristles and no discal hairs; sternopleura with one long and usually some much shorter

bristles above. None of the tibiae with distinct bristles, the preapical dorsal one even lacking; all tarsi with the basal segment longer than the second and not at all thickened.

Genotype, the following species.

Protoborborus neozelandicus, sp. n.

Male and female.—Shining black, the face, genae, bases of coxae, the trochanters, bases of femora, the tibiae basally, and nearly all of the mid and hind tarsi testaceous yellow. Wings hyaline. Knobs of halteres yellow.

Head in profile as fig. 2, general colour shining black, the anterior margin of frons, the face, genae, and a streak along lower half of postocular orbits, testaceous yellow. Frons at posterior ocelli about half of the head width, from that point backward rather abruptly widened, anterior to the posterior ocelli almost parallel-sided, the surface smooth and shining, with very minute sparse dark hairs, the length about equal to the width. Third antennal segment subquadrate, the arista nearly twice as long as the width of frons, hair-like, and rather distinctly pubescent on its entire length; the apical setulose hairs on second segment below long.

Thorax shining black, with the dorsocentrals 1 + 3, the single humeral, the 2 notopleurals, the prealar, presutural, supra-alar, and one postalar, long, a short postsutural intra-alar situated nearer to suture than to posterior margin about as long as the posterior postalar; acrostichals irregular, sometimes 1 or 2 in series anteriorly longer than the hairs; scutellum slightly greyish dusted, with two long apical and two much shorter basal bristles and no surface hairs; propleural well developed, sternopleura with one bristle and some setulae above; mesopleura bare; prosternum sclerotized only centrally and without setulae.

Legs moderate, with bristles present only on the posterodorsal and posteroventral surfaces of the fore femora; none of the tarsi modified in any way.

Abdomen concolorous with thorax, rather stout, subcylindrical in the male. The seventh tergite enlarged and glossy in both sexes, longer than the two preceding tergites combined, the male with the genital organs extending forward below.

Wings greyish hyaline, venation as fig. 1.

Halteres with yellow knobs.

Length, 2·5–3 mm.

Type, female, and one ♂ paratype, New Zealand: Wanganui (*M. M. Watt*). Allotype, New Zealand: Otira, Feb. 10, 1922 (*A. L. Tonnoir*).

The type will be deposited in the British Museum, the allotype returned to New Zealand.

There is a rather striking resemblance in some respects between this species and some of those placed by me in the Patagonian genus *Notomyza*, Malloch, but in the latter the anal and second basal cells are complete, the antennae are of the typical form with normal aristae, and there is a distinct preapical dorsal bristle present on two or all pairs of the tibiae.

I know that there are several genera in the Acalyptrate series that it is impossible, or almost impossible, to place without giving rise to a debate on the correctness of the interpretation of their places in the system, and this is especially the case in the Patagonian Region and to possibly an even greater extent in New Zealand. The one now described is one such case, and in my report on the species from Patagonia there are similar cases, some very closely allied to those from New Zealand and others strikingly dissimilar. I hope to deal later with this phase of our classification in my report on the Patagonian material.

DESCRIPTION D'UNE NOUVELLE ESPÈCE DU GENRE *CANTHAROCNEMIS*, SERV. (COLEOPTERA, CERAMBYCIDAE)

Par N. N. Plavilstshikov.

(*Moscow.*)

Cantharocnemis filippovi, sp. n.

Species distinctissima, ad subg. *Cantharoctenus*, Westw., proxima.

♂. Brunnescente-cinnamomeus, capite paulo obscuriore, pronoto basi apiceque anguste nigro marginato, scutello late nigro aut nigricante limbato. Antennis 24- aut 25-articulatis, gracilibus, dimidium elytrorum multo superantibus (elytrorum $\frac{4}{5}$ longitudinis); Articulo 1 forte asymmetrico, rotundate-dilatato et depresso, articulo 2 longitudine sua multo (1, 9–2, 0) latiore, articulo 3 primo distincte breviore, articulis 4—penultimo subaequalibus; articulo 3° apice longe angusteque bilamellato, basi breve sed late unilamellato, articulis 4—penultimo basi apiceque longe angusteque bilamellatis, lamellis forte divergentibus (in summam-quadrilamellatis); articulo ultimo basi bilamellato, apice breve subbilamellato et longe appendiculato. Mandibulis elongatis, longitudinem capitis subaequalis, non falciformis, margine inferiori dentatis, basi dense ruguloso-punctatis. Genis brevissimis, oculis magnis. Pronoto longitudine sua plerumque minus quam sesqui latiore, angulo dentiformi laterali in triente basali armato; disco modice convexo, fortiter sed non dense punctato, ad latera dense irregulariterque ruguloso punctato; marginibus antico et postico dense fulvo-aurantiaco ciliato. Scutello lato, subrotundato. Coleopteris subparallelis, convexis, apice rotundatis, angulo suturali spinoso producto; dorso nervis tribus ornatis (exteriore abbreviato et parum distincto), dense vermiculosis. Sterno fulvo-aurantiaco villoso, abdomine fulvo-aurantiaco pubescente. Prosterno dense ruguloso-punctato, metasterno dense punctato. Femoribus tibiisque intus dense aurantiaco pilosis. Tibiis denticulatis, intermediis ante apicem dente longissimo armatis. Tarsis posterioris articulo 3 profunde bilobato, articulo ultimo articulis 1–3 summa sumptis non breviore.

♀ ignota.

Long. corp. ♂ (sine mand.) 22·4–27·4 mm., lat. ad hum. 9–11 mm.

Habitat. Arabia: Yemen, Mafchak, 9.viii.1931 (*N. Filippov*).
Duo specimina (♂) (coll. mea, coll. N. Filippov).

Mandibules non falciformes, échancrées et armées d'une dent médiane à son côté interne; fortement et rugueusement ponctuées dans sa partie basale, glabres dans sa partie apicale; longues et fortes, un peu ou presque pas plus courtes que la tête. Front fortement mais pas très densement ponctué, avec une dépression transversale préapicale, finement sillonné longitudinalement. Vertex grossement et densement, plus ou moins ruguleusement et irrégulièrement ponctué, sillonné longitudinalement. Joues très courtes, presque nulles. Yeux très grands, modérement echancrés. Antennes longues, n'atteignant qu'un peu l'extrémité des élytres (atteignant jusqu'au 4me arceau ventral ou un peu plus longues que $\frac{4}{5}$ de la longueur des élytres); de 24–25 articles; les articles sont courts, les 1er et 2me très larges; 1er article large, assymétrique, assez fortement et irrégulièrement ponctué; 2me article beaucoup plus large que long, 3me article distinctement plus court que le 1er et un peu plus court que le 4me article; 4me article et les suivants de la longueur presque égale, presque deux fois plus longs que larges. 3me article offre à son extrémité un prolongement interne en forme de deux lamelles latérales, et à sa base un prolongement court et large (non bilamellé); les articles 4me à pénultieme présentent à leur base interne un prolongement composé de deux lamelles, longues et étroites, et offrent à leur extrémité la même disposition, de sorte que ces articles sont ornés du côté interne de quatre prolonge-

ments ou lamelles, les lamelles basilaires sont toutes un peu plus courtes que les apicales; les lamelles sont très longues, plus longues que deux et un peu plus courtes que trois articles des antennes réunis; le dernier article offre un prolongement basilaire, presque normal, prolongement apical est court, composé de deux lamelles non separées à leur base, cet article offre encore un appendix, assez long, plus ou moins échancré à son extrémité et présentant un prolongement interne court et assez large.—Pronotum distinctement plus large que long (presque en 1.5 fois), avec une dent latérale dans son tiers basal; très modérement convexe sur le disque, un peu plus large sur sa base que sur son extrémité, finement rebordé antérieurement, avec une constriction basale, profonde mais très étroite; assez fortement mais non densement ponctué sur le disque, densement et irrégulièrement, ruguleusement ponctué sur ses côtés; avec les bords antérieur et postérieur densement ciliés de poils jaunâtres.—Ecusson grand, largement arrondi, fortement emoussé sur l'extrémité, sans sculpture visible mais avec un rébordement, plus ou moins distinct. Elytres presque parallèles, larges, convexes, largement arrondies sur l'extrémité, l'angle sutural prolongé dans une dent, bien distincte; avec deux côtés ou nervures longitudinales, bien distinctes, et la trace d'une troisième nervure, plus externe, distincte seulement (plus ou moins) dans le milieu des élytres; densement et assez rudement vermiculées, modérement brillantes. Sternum avec une pubescence d'un jaune doré, dense et très longue, villeuse. Prosternum densement et ruguleusement ponctué la saille prosternale assez étroite, fortement déclive; la saille mésosternale moins déclive et beaucoup plus courte. Métasternum densement et assez finement ponctué. L'abdomen assez densement mais très irréguliérement ponctué; les points plus grands portent les poils d'un jaune doré; la pubescence de l'abdomen est assez longue, mais pas dense et, dans tous les cas, non villeuse; 5^{me} segment ventral presque aussi long que le 4^{me}, faiblement trapézoidal et très faiblement tronqué au bout. Les fémurs fortement mais éparsement ponctués, les tibias denticulés sur leur bord externe, les intermédiaires avec une grande dent préapicale; fémurs et tibias offrent une épaisse longue brosse d'un jaune doré. Tarses postérieurs sont un peu plus court que les intermédiaires, avec le dernier article très long, aussi long que tous les articles précédents réunis; 3^{me} article profondement bilobé.

Corps d'un brun marron clair, la tête un peu obscurcie, pronctum étroitement rébordé de noir antérieurement et postérieurement, l'écusson largement marginé de noir.

D'après ses antennes multiarticulées et ornées des prolongements ainsi que d'après les autres caractères (les tarses, les saillies prosternale et mésosternale, la sculpture des élytres, etc.) cette espèce est plus voisine des espèces qui rentrent dans le sous-genre *Cantharoctenus*, Westw. Mais les espèces de ce sous-genre ne présentent plus que 20 articles des antennes, tandis que *C. filippovi*, m. présente au moins 24 articles; les prolongements des antennes sont chez l'espèce nouvelle largement separés, le dernier article offre les prolongements très distincts et encore un appendix, les prolongements basilaires et apicales sont très longs et presque égals, les antennes (♂) sont beaucoup plus longues; les élytres offrent seulement deux nervures distinctes, mais présentent une dent suturale plus longue et très distincte; le front est très court avec le sillon longitudinal faiblement marqué, indistinct, le dernier article des palpes est seulement subfusiforme. D'après ses antennes *C. filippovi* diffère sérieusement de tous les autres espèces du genre *Cantharocnemis*. Il est très possible que cette espèce présente un sous-genre particulier, mais je ne crois pas possible d'établir ce sous-genre d'après les mâles seulement (la femelle est encore inconnue). Dans tous les cas cette espèce nouvelle est très intéressante par ses antennes si multiarticulées et présentant les prolongements très longs et totalement divisés en deux lamelles, fortement divergentes. Il est très intéressant de noter en même temps, que les espèces du sous-genre *Cantharoctenus* sont connues seulement de l'Afrique orientale.

J'ai le plaisir de dédier cette espèce intéressante à M. Nicolas Filippov, qui l'a trouvé dans l'Yemen.

SOME AFRICAN BEES OF THE GENUS *CROCISA*

By Prof. T. D. A. Cockerell, F.R.E.S.

Some of the characters which distinguish species of *Crocisa* are of special interest to the student of genetics. Thus the mesothorax, in the majority of the species, has a very characteristic discal pattern of pale hair, consisting of a median stripe and a pair of spots, one on each side of the stripe. One would expect to find the elements of this pattern controlled by the same factors, but this is not the case. Such species as *C. neavei* and *C. delagoana* lack the median band, but have the spots. On the other hand, *C. bequaerti*, *C. tenuicornis*, *C. axillaris* and *C. kabetensis* possess the band, but lack the spots. It is the same with the pattern of the scutellum. In its complete development (*C. tschoffeni*, *C. luangvensis*) there are three spots. In many species there is a median spot, above the incision, but the lateral spots have disappeared. In still others the scutellum is wholly unspotted. From beneath the incision there is usually a fringe of long white hairs. This is not correlated with the other markings, and in one group is wholly lacking.

The types of *C. simulans* and *C. kabetensis* will be found in the British Museum. Those of *C. bequaerti* and *C. tenuicornis* were received from Dr. J. Bequaert, and at his request will be placed in the Congo Museum at Tervueren, Belgium.

Crocisa simulans, sp. n.

♀. Length 14 mm., anterior wing 11·6; robust, black, with pure white markings; anterior thoracic spots (about half on prothorax, half on mesothorax) widely separated in middle, but joining lateral bands, which are rather narrow, and are posteriorly united with the large posterior spots, the whole with the outline of a clay pipe (style of *C. delagoana* and *C. gambiensis*); median stripe of mesothorax lanceolate, rounded in front, tapering posteriorly, distant from the anterior lateral spots by a space about equal to its diameter; discal spots large, round, somewhat broader than the interval between them and the median mark; axillae black, with a small sharply defined white spot on the side next to scutellum; scutellum black, except for a reversed V in white above the incision; copious white hair below the incision; no median groove; margin of scutellum broadly W-like, but bulging close to the incision; tegulae with a large white spot posteriorly; sides of thorax above white, below black, with three white spots; anterior wings very dark, the hyaline spots inconspicuous; hind-wings lightly suffused with brownish apically; tibiae externally with dense white hair, the apical third or more black on middle and hind pair, the white of hind pair conspicuously dotted with black; basitarsi with much white hair; first tergite with thick C-like lateral marks, widely separated in middle; marks on second tergite with a narrow extension basad; venter with four white spots; last sternite with an obtuse median ridge, penultimate one with a fine raised line. So similar to *C. nubica*, Lep., that at first sight it appears the same, but clearly distinct by the pattern of the thorax and abdomen, and the wider lobes of scutellum. The markings are very sharply defined, and appear very white, yet as compared with *C. nubica* the inner margins of the abdominal marks present a slightly greyish appearance. In the key in *Stylops*, 2 : 37, it runs to *C. gambiensis*, agreeing in the complete occipital fringe, but it differs by the entirely black flagellum, anterior thoracic spots widely separated, femora black, tarsi white-marked, and spotted venter. The white spots on axillae are also distinctive. It is a much larger insect than *C. gambiensis*.

Gold Coast: Yapi, Dec. 1916 (*J. J. Simpson*), British Museum.

Crocisa bequaerti, sp. n.

♂. Length about 13 mm., robust, with blue markings, very bright on abdomen; mesothorax with large anterior marks, confluent with those on prothorax, longitudinal discal mark broad but not very long, no discal spots; posterior spots large, kite-shaped, not confluent with the broad lateral bands; axillae entirely covered with pale blue hair; scutellum large, entirely without light markings, its margin W-like, clear white hair projecting from below incision; mesopleura blue-haired above, then broadly black, but with a blue band below; anterior wings very dark; hind femora not toothed; front tibiae with bright blue hair on outer side except at apex; middle tibiae very stout, with light blue hair shading to white at base, the lower margin of the hair patch arched; hind tibiae with basal half externally covered with light blue hair; front basitarsi with blue hair on outer side, middle and hind ones with pale blue hair, failing apically; first tergites with the sides (except narrow apical margin) covered with blue hair, but the middle broadly black, the inner margin of the blue angularly incised, the invading black having the outline of a human nose; tergites 2 to 5 with large lateral blue spots, those on second briefly and inconspicuously angulate above; venter with very slight traces of blue hair; apex rather narrow, with a pair of broad angular (broadly V-shaped) teeth.

Liberia: Reppo's Town, September (*J. Bequaert*). The general aspect is that of *C. scotaspis*, Vachal, which has dark axillae and the end of abdomen quite different. There is considerable resemblance to *C. praetexta*, Vachal, but that has paler and somewhat different markings. The pattern of the mesothorax suggests *C. axillaris*, Vachal, which has paler hair. The pale occipital fringe is not interrupted sublaterally, and the fourth antennal joint is much longer than in *C. scotaspis*.

Crocisa tenuicornis, sp. n.

♀. Length about 13 mm., not so robust as *C. bequaerti*, markings clear light blue, nearly the same tint throughout; clypeus densely and finely punctured; occipital fringe interrupted in middle, but not sublaterally; mesothorax with large anterior spots, confluent with those on prothorax; median band of mesothorax broad, not reaching anterior margin, no discal spots; large spots next to tegulae, not nearly confluent with the cuneiform posterior spots; axillae blue-haired; scutellum shining, wholly without spots, the margin W-like, with copious white hair from beneath the incision; upper part of mesopleura with pale blue hair, but the lower band reduced to a small amount of hair; upper wings dark, with the usual hyaline spots; front tibiae with blue hair on outer side, middle and hind tibiae with about the basal half blue-haired; basitarsi with blue or bluish-white hair on outer side; trochanters, femora and tibiae reddish; abdomen shining with clear dull (not shining) blue markings; first tergite with a large blue mark on each side, angularly incised on the inner face, broader apically than basally; tergites 2 to 5 with large blue marks, that on second not produced anteriorly (cephalad); venter without light spots; last sternite prominently but obtusely peeled or ridged its whole length; penultimate one with a keel at the apex.

Belgian Congo: Elisabethville, Katanga, Apl. 20, 1920 (*Michael Bequaert*). Closely allied to *C. bequaerti*, but less robust, with paler blue markings on abdomen. The antennae are much less robust, and reach only to level of tegulae. The first recurrent nervure joins the second cubital cell nearer the end. I wondered whether this could be the very briefly described *C. axillaris*, Vachal, but the female of that species, as described by Meyer, is evidently different.

Crocisa cyanescens, Cockerell.

Belgian Congo: Lubumbashi, Katanga, Dec. 20, 1920 (*Michael Bequaert*). Described (1919) from Natal. *C. cyanescens*, Meyer, 1921, from Aden, is a different species, and may take the name **C. meyeri,** nom. nov.

Crocisa praetexta, Vachal.

Sierra Leone, ♀ (British Museum, 58, 166); Uganda: Madi, May 1927, ♂ (*G. D. H. Carpenter*). This is a large species, with the following characters: anterior wings very dark, the hyaline spots inconspicuous; posterior wings clear, not darkened at end; spots on mesothorax large; lateral bands and posterior marks on mesothorax joined, the whole having the outline of a clay pipe; axillae and scutellum wholly without light hairs, but white hair from beneath scutellar incision; margin of scutellum angularly incised, but the edge bulging on each side of middle; abdominal markings dull pale blue; marks at sides of first tergite U-like; marks on second tergite broad, with a large extension toward base; middle and hind basitarsi without light hair; venter immaculate. The apex of male abdomen is rather narrow, with a short tooth at each corner, and a rounded swelling in middle; not strongly tridentate as in *C. scotaspis*, Vachal. In the British Museum I saw specimens from S. Nigeria; Oshogbo (*Dr. T. F. G. Mayer*) and N. Nigeria; Minna (*J. W. Scott-Macfie*). There is also one labelled "Port Natal. 49, 29."

Crocisa kabetensis, sp. n.

♀ (Type). Length 12–13 mm.; robust, black, with white markings, those on the abdomen appearing very faintly bluish; face densely covered with white hair; fourth antennal joint about as broad as long; black hair behind ocelli; white occipital fringe not interrupted sublaterally; white hair of thorax long and thick, the large prothoracic spots invading mesothorax; median band of mesothorax long and broad, pointed posteriorly, anteriorly thick, almost touching the anterior patches of hair; no discal spots; lateral bands broad, broadly united with posterior spots; axillae with a spot next to mesothoracic spots, or practically unspotted; scutellum wholly unspotted, and with no median groove, the margin W-like, and white hair below the incision; upper part of mesopleura thickly white-haired, lower band oblique and small; tegulae with no hair spot; anterior wings rather dilute brown, the hyaline spots indistinct; apical part of hind-wings dusty; tibiae with dense white hair on outer side, the apical third of middle pair, and apical half of hind pair, black; basitarsi with much white hair; marks on first tergite U-like, the apical bands broad, and not widely interrupted; bands on second tergite without any anterior extension; venter with six conspicuous transverse hair-spots; last sternite with a shining median band extending its whole length.

Male with apex of abdomen truncate, slightly emarginate, not dentate; hind femora simple.

British E. Africa (Kenya): Kabete, 6,200 ft. alt. (*T. J. Anderson*). Imperial Inst. Entomology. Numerous specimens, Oct. 28 to Nov. 5. The type is labelled "*Crocisa*, not in B.M." The white markings and U-like marks on first tergite at once distinguished it from *C. bequaerti* and *C. tenuicornis*, described above, in which the mesothoracic spots on each side of the median stripe are also absent. These spots are also absent in *C. axillaris*, Vachal, but that has the axillae covered with pale hair, no spots on venter, and the markings of first tergite different.

HISPINEN (COL.) VON JAVA

Von Dr. Franz Spaeth.

(*Wien.*)

Die Veranlassung zur folgenden Arbeit gab eine kleine Sendung Hispinen, welche Sir G. A. K. Marshall, für das Imperial Institute of Entomology, mir zur Determination übersendet hat. Die Tiere wurden von Herr T. H. C. Taylor aus Pflanzen, deren Blätter die Larven minierten, gezüchtet. Dieser letztere Umstand erklärt die auffällige Tatsache, dass fast alle gesendeten Arten neu waren.

Lepthispa bicornis, sp. n.

Filiformis, ad latera convexa, nitida, piceo-nigra, abdomine laete testaceo, pedibus rufopiceis, genubus parum dilutioribus; antennae breves articulo primo apice extus acuminato, subtus deplanato; frons subquadrata, processu utrinque dilatato et in cornum brevem acuminato, medio leviter emarginato, supra obsolete canaliculato et sparse punctato; prothorax longitudine parum latior, lateribus marginatis, subparallelis, antice tantum convergentibus, angulis posticis retrorsum directis, subacutis; elytra prothorace non latiora sed fere quintuplo longiora, parallela, ad apicem vix angustata et ad suturam leviter emarginata, regulariter punctato-striata, interstitiis laevibus, subalutaceis, inter se aequalibus. Long.: 6 mm. var. prothoracis margine reflexo rufesente.

Fast fadenförmig schmal und lang, mit bis weit hinter die Mitte parallelseitigen, erst ganz hinten schwach konvergierenden Flügeldecken, ziemlich glänzend, pechschwarz, der Bauch lebhaft gelb, die Beine pechrot mit je nach Ausfärbung heller oder dunkler braungelber Knien.

Die Fühler sind kaum so lang als Kopf und Halsschild zusammen; das 1. Glied ist unten etwas platt gedrückt und zerstreut punktuliert, am Ende ziemlich erweitert und aussen in eine schwach spitzwinkelige Ecke vorgezogen; das 2. ist merklich kürzer, die letzten nicht dicker. Der Clypeus ist eine etwas konkave, sphärischdreieckige, schmale, glatte Fläche; die Stirn ist vor die Augen in eine wenig sich verbreiternde Platte vorgezogen, die an jedem Ende in eine kurz, wie ein Hörnchen vorragende, gerade nach vorne gerichtete, spitzwinkelige Ecke ausgezogen, dazwischen in weitem Bogen ausgerandet ist; am Vorderrande ist sie dichter, hinten allmählig feiner und sparsamer punktiert; zwischen den Augen ist in der Mitte ein längerer, aber seichter, daneben je ein kürzerer, tieferer Eindruck.

Halsschild etwas breiter als lang, mit fast parallelen, geraden, nach hinten kaum, nach vorne stärker konvergierenden Seiten, deren verdickter Rand bei einigen Stücken rötlich ist; die Hinterecken treten nach hinten in eine kurze Spitze vor; die Scheibe ist zerstreut, ziemlich grob, dazwischen dichter und feiner punktiert; vor der zum Schildchen vorgezogenen Mitte des Hinterrandes ist ein undeutlicher Quereindruck, vor dem die gröberen Punkte oft gedrängter stehen.

Flügeldecken so breit und fast fünfmal so lang als der Halsschild mit einem kurzen Skutellar und zehn sehr dünnen, kaum erkennbar punktierten, ganz regelmässigen Streifen, von denen der vierte und fünfte vor der Spitze abgekürzt sind; die Zwischenräume sind breiter als die Streifen, alle gleich, nur der letzte an der Spitze breitere, matt glänzend, die Nahtspitze ist gemeinsam schwach ausgerandet und in je ein feines Zähnchen ausgezogen. Die Seiten der Brust sind grobnarbig, ziemlich dicht punktiert.

Die neue Art ist durch die stärker vortretenden Seitenecken des Stirnfortsatzes ausgezeichnet, die in ihrer Bildung an manche Cryptonychini, erinnern, von welcher Abteilung sie sich aber durch den Mangel des zwischen die Fühlerwurzeln eindringenden Mitteldornes unterscheidet. Sie scheint am nächsten mit der (mir unbekannten) *L. bouchardi*, Gest., verwandt, die aber ausser einigen Färbungsverschiedenheiten durch die Längsstrichel an den Halsschildseiten von ihr verschieden ist. Herr T. H. C. Taylor hat von dieser Art 4 in Buitzenzorg im März 1932 gesammelte Stücke eingesendet, deren Larven in eingerollten *Bambusa* Blättern gefunden wurden.

Downesia perniciosa, sp. n.

Filiformis, subparallela, apice perparum dilatata, supra subopaca, brunnea, subtus magis nitida, dilutior, flavotestacea, pedibus laete brunneis; antennae breves, ad apicem haud incrassatae, articulo 2 tertio longiore et multo crassiore; prothorax latitudine modice longior, lateribus postice perparum sinuatis, margine apicali medio leviter convexo, disco utrinque oblique ab angulis anticis ad scutellum leviter impresso, antice sat profunde sulcato-strigato, striis mediis fere basin attingentibus exterioribus sensim brevioribus et debilioribus; elytra prothorace nec latiora, sed fere quadruplo longiora ad apicem vix latiora, postice emarginata, angulo suturali dente subacuto; disco 7 = striatopunctata, striis 2 et 3 ad basin, mox ante medium cojunctis, stria 6 brevissima, mox pone basin abbreviata, interstitiis 1, 3 et 5 subcarinatis, costibus duabus primis medio subinterruptis. Long.: 6 mm.

In die Gruppe der Arten mit längsgestricheltem Halsschild gehörig, aus welcher bisher *strigicollis*, Baly, *angustata*, Fleut., *auberti*, Fairm., *maculaticeps* und *strigosa*, Pic, beschrieben wurden.

Schmal walzenförmig, gegen die Spitze kaum merklich erweitert, einfärbig braun, nur die Unterseite, besonders Brust und Bauch heller, mehr gelblich, oben fast matt, unten stärker glänzend.

Die kurzen Fühler sind nicht länger als Kopf und Halsschild zusammen, dünn, mit 5 kaum dickeren, stärker behaarten und enger aneinander gefügten Endgliedern; das 1. und 2. sind dicker, das 1. am Ende mit einer unbedeutenden stumpfen Erweiterung aussen, das 2. zylindrisch, kaum um die Hälfte länger als dick, das 3. wenig, alle folgenden merklich kürzer, hievon das 6. am kürzesten. Stirn gewölbt, mit einzelnen, zerstreuten, feinen Punkten; um den Augenrand eine dichte Punktreihe.

Halsschild etwas länger als breit, an der Seite hinter der Mitte sehr schwach ausgebuchtet; der Vorderrand verläuft in einer schwach konvexen Linie, der Hinterrand ist durch eine Querlinie vor ihm abgesetzt und jederseits in ein spitzes Zähnchen ausgezogen. Die Scheibe ist vorn in der Mitte dachförmig ansteigend; diese Erhöhung wird hinten jederseits begrenzt durch einen von der Vorderecke in die Mittellinie vor das Schildchen verlaufenden, seichten Schräg-Eindruck; hinter dem Vorderrande ist zuerst eine mit ihm parallele Querrinne mit einer dichten Punktreihe; dahinter sind zahlreiche (jederseits etwa 12) dicht nebeneinander stehende Längsleisten, die alle gleichmässig hinter der eben erwähnten Querrinne beginnen, hinten aber nach aussen immer kürzer und schwächer werden, so dass nur die innersten bis nahe an die Basis reichen, während die letzten schon bald nach den Vorderecken erlöschen; im allgemeinen wird ihre hintere Grenze durch die erwähnten Schräg-Eindrücke bestimmt; die schmale Oberkante dieser Längskiele scheint dunkler braun und ist stärker glänzend; aussen vor den Hinterecken ist die Scheibe matt, ohne Skulptur.

Flügeldecken mit 7 Punktstreifen und 3 Rippen; die Streifen 2 und 3 sind im basalen Drittel vereint, der Streif 6 nur im basalen Viertel vorhanden, wo er unter der über die Schulter laufenden Kante der 3. Rippe liegt; ausserdem sind kurz hinter der Mitte, innen vom 7. Streif einige Punkte bemerkbar, die man dem 6. zuzählen kann; die 1. Rippe liegt nach dem 1. Streif, die 2. nach dem 3., die 3. nach dem 5.; die 1. ist in der Mitte schwächer, die 2. eigentlich nur an der Basis und Spitze kräftiger ausgebildet, die 3. in der ganzen Länge stark; hinten vereinigen sie sich nicht; ausserdem ist die Basis des zwischen der 2. und 3. Rippe liegenden sekundären Zwischenraumes schwach herausgehoben. An der Spitze sind die Flügeldecken gemeinsam mässig tief ausgerandet mit je einem feinen, spitzen Nahtzähnchen. Die Schenkel, insbesonders jene des 1. Paares sind sehr dick; die Vorderschienen haben aussen an der Basis eine grosse, vor der Spitze eine kleinere, zahnförmige Erweiterung.

Die Larven dieser Art, von welcher T. H. C. Taylor 7 im April 1932 in Buitenzorg gesammelte Stücke einsandte, minieren in *Bambusa* Blättern.

Downesia excelsa, sp. n.

Elongata, nitida; antennae capite et prothorace vix dimido longiores, articulis apicalibus vix crassioribus, articulo 1 apice subinflato, 2 cylindrico, latitudine haud longiore, ceteris basalibus tenuioribus, 3 secundo longiore, 4–6 brevioribus, 7 parum, 8–10 sat longioribus, omnibus (duobus basalibus exceptis) pilosis; prothorax latitudine vix longior, lateribus subsinuatis, margine reflexo, ad basin vix convergentibus, disco subtiliter nec dense aciculate punctato; elytra prothorace vix dimidio latiora, fere quadruplo longiora, postice 8 = punctatostriata, striis 1 et 2 in triente basali, 3 et 4 sicut 5 et 6 in medio cojunctis, 7 medio interrupto; interstitiis alternis antice latioribus sed vix altioribus, ad apicem subcostatis. Long.: 7 mm.

♂: supra castaneo-rufus, subtus niger, pro- et mesosterno castaneo-rufis, pedibus nigris, sed femoribus et tibiis anticis totis, femorum mediorum parte antica rufis; tibiis anticis apice intus dente apicali acuto.

♀: tota rufotestacea, tibiis anticis non dentatis.

Von dieser Art liegen 1 ♂ und 3 ♀♀ vor, die im August 1932 in Buitenzorg gesammelt wurden und deren Geschlechter sich auch nach der Färbung unterscheiden. Das ♂ ist oben kastanienrot; dieselbe Färbung haben der Clypeus, die Unterseite des Halsschildes, das Mesosternum; die Schenkel und Schienen des ersten Fusspaares, sowie die Vorderseite der Mittelschenkel sind gelbrot; die übrigen Teile der Beine, sowie der Unterseite sind schwarz, ebenso die ganzen Fühler, letztere vom 3. Gliede an mit brauner Behaarung; die ♀ sind ganz gelb, nur die Fühler hellbraun; ich will die Frage offen lassen, ob diese Färbungsverschiedenheit ein sexuelles Merkmal ist, oder ob die eingesendeten ♀ infoge einer mehr verborgenen Lebensweise längere Zeit zur vollständigen Ausfärbung benötigten, doch möchte ich feststellen, dass die Tiere durchaus nicht den Eindruck erwecken, sie seien noch nicht ausgereift.

Schmal und langgestreckt wie die vorige, aber grösser, breiter, nicht walzenförmig, mit im Verhältnis zum Halsschild viel breiteren Flügeldecken, mit längeren Fühlern, oben stark glänzend. Stirn breit, zwischen den Augen matter, sehr fein und zerstreut punktuliert und schlecht sichtbar kurz gelb behaart. Fühler etwas länger als Kopf und Halsschild zusammen, die ersten zwei Glieder stärker, die Endglieder viel schwächer verdickt, das 1. länger als das 2. und am Ende etwas angeschwollen, aber ohne Aussenecke, das 2. nicht länger als dick, kürzer und dicker als bei der vorigen Art, das 3. länger, um die

Hälfte länger als dick, das 4. bis 6. wieder kürzer, fast gleich, die 5 Endglieder dichter braun behaart und um die Hälfte länger als dick.

Halsschild wenig länger als breit, hinter den echten, mit einer Borstenpore versehenen Vorderecken am breitesten, dann zuerst sanft, hierauf schwach ausgerandet verengt, dann in eine stumpfe Ecke erweitert und zu den Hinterecken eingezogen, hier mit einem kleinen Zähnchen und Borstenpore; die Seiten mit schmalem, aufgebogenem Rande, die Scheibe mit zerstreuten, längsrissigen, feinen Punkten.

Flügeldecken viermal so lang als der Halsschild, nach hinten verbreitert, an der Nahtspitze nur wenig ausgerandet und jederseits mit einem Zähnchen; je mit 8 Punktstreifen hinten, die sich an der Basis auf 5 vermindern, da der 1. und 2. sich vor, der 3. und 4. und der 5. und 6. in der Mitte vereinigen; der 7. ist nur kurz an der Basis unter der Schulterbeule und von der Mitte bis vor die Spitze vorhanden; ganz undeutlich kann man auch den 3. und 4. Streif an der Basis getrennt sehen; von den Zwischenräumen sind die primären in der vorderen Hälfte (der 3. nur ganz vorn) breiter und flach gedrückt; hinten sind alle stark gewölbt (auch die sekundären). Das ♂ hat an der Spitze der Vorderschienen innen einen ziemlich langen dornartigen Zahn, wie er auch bei *gestroi*, *fulvipennis*, *grandis* und *elegans* erwähnt wird.

Unter diesen letzteren Arten dürfte *D. gestroi* am nächsten verwandt sein, doch sind bei dieser (nach Maulik, Faun. Brit. Ind., Chrysomelidae : 115) die Streifen 3 und 4 sowie 5 und 6 bis vorne nur genähert, aber nicht vereinigt, der Kopf ist zwischen den Augen konkav und hat in der Mitte eine glatte, glänzende Stelle; auch ist die Färbung anders; von *D. fulvipennis*, Baly ist die neue Art durch geringere Grösse, punktierte Halsschild-Scheibe, breiteren Thorax verschieden.

Die Larven minieren in *Bambusa* Blättern.

Downesia sumatrana, Gest.

Auch von dieser, übrigens bereits mehrfach aus Java nachgewiesenen Art hat Mr. Taylor mehrere in Buitenzorg im April 1932 gesammelte Stücke mit der Notiz eingesendet, dass die Larven die Blätter von *Bambusa* minieren.

Agonia opacula, sp. n.

Elongata, piceonigra, antennarum articulo 1 (interdum quoque subtus), fronte et prothorace mediis, pro-, meso- et metasterno mediis, denique sternitis 4 primis et femoribus tibiisque anticis rufofulvis; antennae sat breves, articulis 3 primis ceteris parum longioribus; prothorax longitudine haud lator, lateribus fere parallelis, vix ampliatis, medio subnitidus, lateribus alutaceis opacis, hic carinula indistincta, curvata, sublongitudinali; elytra lateribus subparallelis, ad apicem vix ampliatis, octo-striata, striis duobus ultimis ante medium cojunctis, sat alte tricostata, costa 3 pone medium leviter intus curvata nec interrupta; sternis crebre alutaceis, subopaciis, indistincte punctulatis. Long.: 3·5–4·5 mm.

Schmal, langgestreckt, fast parallel, nach hinten nur kaum merklich erweitert. Im allgemeinen durch die grobe Schagrinierung matt, nur die Flügeldecken und die trübroten Stellen des Körpers schwach glänzend; die Flügeldecken schwarz, der Grund der Punkte in den Streifen zuweilen hell durchscheinend; sonst pechschwarz, jedoch das 1. Fühlerglied (meist nur unterseits), der Clypeus, ein verschieden breiter Mittelstreif auf Stirn und Halsschild, die Mitte der Sternen und die vier ersten Sternite trüb gelbrot; ebenso ein Teil der Beine, und zwar meist die Schenkel und Schienen des 1. Paares, zuweilen sind aber auch die Basis der Mittel- und Hinterschenkel oder auch die Tarsen heller, oder

die Vorderschenkel teilweise dunkel; auch die Basis der Flügeldecken hat zwischen der 2. und 3. Rippe bei einem der Stücke je einen helleren Fleck.

Die Fühler sind wenig länger als Kopf und Halsschild zusammen; ihre Endglieder sind kaum dicker; das 1. und 2. Glied sind verdickt, letzteres zylindrisch und kaum merklich länger als das 3.; alle folgenden sind fast gleich lang und etwas kürzer.

Halsschild so breit als lang, vorne nicht verengt, mit fast geraden Seiten, oben mit Ausnahme der glatten Mittelstelle dicht und grob schagriniert, hinter dem Vorderrande ohne Punktreihe, sonst nur undeutlich punktuliert und an der Seite mit einer unscharfen, schwach gekrümmten Längsleiste, aussen hievon mit einigen Unebenheiten und unscharfer Randung.

Flügeldecken breiter als der Halsschild, hinten sehr schwach einzeln abgerundet, ohne Sägezähne, mit je 8 Punktstreifen und 3 Rippen; die Streifen wie gewöhnlich paarweise genähert, grob und sehr tief, der 7. nur unter der Schulterbeule und hinter der Mitte vorhanden; die Rippen alle gleich hoch, ohne Unterbrechung, die 3. von der Stelle an, wo der 7. Streif wieder anfängt, bis hinten mehr nach innen gebogen; auch die Basis des zwischen der 2. und 3. Rippe liegenden sekundären Zwischenraumes ist schwach kielförmig herausgehoben.* Die Seiten der Brust sind neben der dichten Schagrinierung verloschen punktiert.

In die Verwandschaft der *A. nitida*, Gest., gehörig, abgesehen von der matten Oberseite und der anderen Färbung durch die Skulptur des Halsschildes und die nicht unterbrochene 3. Rippe verschieden.

Herr T. H. C. Taylor hat sechs im April 1932 in Buitenzorg gesammelte Stücke mit der Anmerkung eingesendet, dass die Larven die Blätter von *Bambusa* minieren. Ein weiteres Stück von Soekaboemi aus Java ist in meiner Sammlung; bei demselben ist die helle Färbung der Halsschild-Mitte breiter, die 1. Rippe der Flügeldecken ist unscharf, teilweise gelbbraun und auch die helle Färbung der Beine etwas ausgedehnter.

Agonia (i. sp.) corrugata, sp. n.

Praecedenti simillima, prothorace, scutello, pedibusque laete testaceis, illo distincte longitudinaliter aciculato, elytris apice distincte crenulatis praecipue differt. Long.: 4 mm.

Java: Soekaboemi (in coll. Spaeth).

Etwas grösser und breiter als *opacula*; die Fühler und Flügeldecken ganz schwarz, die Seiten der Hinterbrust pechbraun, der übrige Körper ganz rötlichgelb, die Tarsen oben kaum merklich dunkler. Die Fühler sind wesentlich länger und etwas kräftiger im allgemeinen mit denselben Längenverhältnissen, aber das 2. Glied länger als das 1. und 3., doppelt so lang als dick; das 1. ganz schwarz. Halsschild etwas länger als breit und länger als bei der vorigen Art, wie das Schildchen ganz rotgelb, oben überall, also auch in der Mitte, dicht längsrissig, die erhabenen Stellen schmal, die vertieften mit sehr undeutlicher Punktierung; an der Seite ist eine kräftiger als bei der vorigen Art ausgebildete, aber sonst ähnliche, mehrfach gebogene Längsleiste, zwischen dieser und dem feinen Seitenrande einige Unebenheiten. Flügeldecken wenig breiter als bei

* Mitunter verbindet sich dieser Kielstummel mit der 2. Rippe und schliesst dann mit dieser einen tieferen und grösseren Punkt ein; es ist dies dieselbe Bildung, welche Weise bei Beschreibung seiner *A. nigripennis* (1905, *Arch. f. Naturges.*, **71**, i : 100) als Gabelung der 2. Rippe erwähnt.

der vorigen, mit ganz der gleichen Skulptur, aber an der Spitze mit deutlichen, gleichartigen Zähnchen.

Agonia (i. sp.) pallipes, sp. n.

Elongata, fere parallela, nitida, nigra, pedibus pallide flavis, subtus pleo minusve brunnea; variat quoque prothorace rufescente, brunneo, vel pleosque anoumis dilutioribus, elytris ad basin diffuse laete pleis; prothorax latitudine parum longior, lateribus parum rotundatis, ad basin vix, ad apicem magis angustatis, supra utrinque oblique impressus, medio laevis, ad latera sat profunde et crebre punctatus; elytra 8-striata, stria 7 medio interrupta, costis tribus, 3 longe subinterrupta, apice vix distincte crenulato. Long.: 4·5–5 mm.

In dieselbe Gruppe wie die beiden vorhergehenden Arten gehörig, von ihnen ausser durch starken Glanz des Halsschildes durch die zum grössten Teil fast erloschene 3. Rippe verschieden; durch das letztere Merkmal noch näher als sie der *A. nitida* Gest., verwandt, aber bei der letzteren ist der Halsschild vorne stark verengt und hinter dem Vorderrande quer furchig-punktiert.

Die Ausfärbung scheint bei dieser Art besonders langsam vor sich zu gehen; nur die Beine sind immer blassgelb; bei voll ausgefärbten Tieren sind die Fühler schwarz, der Kopf und die Unterseite braungelb, die Flügeldecken schwarz. Der Halsschild ist entweder schwarz oder gelbrot oder zwischenfärbig; die Flügeldecken sind bei nicht voll ausgereiften Stücken in der vorderen Hälfte oft pechbraun.

Fühler ziemlich lang, um die Hälfte länger als Kopf und Halsschild zusammen, nach aussen kaum dicker; das 2. und 3. Glied sind doppelt so lang als breit, die folgenden durchschnittlich um die Hälfte länger als breit, länger und dünner als bei den vorhergehenden Arten. Stirn und Scheitel spiegelglatt. Halsschild kaum länger als breit, mit wenig gerundeten Seiten, nach vorn wenig mehr als nach hinten verengt; die stark glänzende Scheibe ist in der Mitte glatt, dann sparsam, an der Seite und hinten in den beiden Schrägeindrücken ziemlich dicht und grob punktiert; hinter den Vorderrande ist keine Punktierung. Flügeldecken wenig breiter und viermal so lang als der Halsschild mit kaum erweiterten Seiten, hinten sehr fein crenuliert, mit 8 paarweise genäherten, groben, tiefen Punktstreifen und 3 Rippen; der 7. Streif ist in der Mitte lang unterbrochen, die 3. Rippe ist nur an der Spitze als solche erkennbar.

Herr T. H. C. Taylor hat 9 Stücke eingesendet, die wie jene von *opposita* im April 1932 in Buitenzorg gesammelt wurden und deren Larven die Blätter von *Bambusa* minieren.

Gonophora taylori, sp. n.

Elongata, nitida, albido-flava, antennis, articulis primis exceptis, nigrescentibus; prothorax longitudine parum latior, lateribus leviter tamen rotundatis, ad apicem magis, ad basin perparum angustatis, supra utrinque minus profunde oblique impressus et mediocre sparsim punctatus, medio subtilissime et ad basin canaliculatus; elytra subparallela, tricostata, costis non interruptis, 3 parum debiliore, interspatiis bifariam, secundo a basi fere ad medium trifariam punctatostriatis. Long.: 5 mm.

Herr T. H. C. Taylor hat von dieser Art 4 Stücke eingesendet, die im August 1932 in Java, am Mt. Gedeh, Tapos, in etwa 800 m. Seehöhe gesammelt wurden; die Larven minieren die Blätter von *Amomum*; alle Stücke sind nicht ganz ausgefärbt, ganz weissgelb, während ausgereifte wohl ähnlich wie *pallida*

rötlichgelb sein dürften; nur die Fühler sind schon dunkler und zwar mit Ausnahme der ersten zwei hellen Glieder entweder ganz schwarz oder die 4 letzten glieder braun. Die Fühler sind lang und dünn, reichlich von halber Körperlänge, das 1. und 2. Glied kurz, das 3. um die Hälfte, das 4. bis 6. doppelt so lang, das 7. wenig, das 8. bis 10. viel kürzer als das 6., letztere drei kaum um die Hälfte länger als dick, im Verhältnis kürzer als bei anderen Arten, z. B. *integra*.

Von der sehr ähnlichen *G. pallida*, Baly, unterscheidet sich *G. taylori* durch den schmäleren, an der Seite gleichmässiger gerundeten und hier nicht winklig erweiterten, nach vorn weniger verengten, oben feiner punktierten Halsschild, der unmittelbar vor den Hinterecken zwar schwach, aber ganz deutlich verengt und ausgebuchtet ist, während bei *pallida* die Seiten hinten gerade verlaufen und kaum konvergieren; die Hinterecken mit der Borstenpore treten daher bei *taylori* deutlich nach aussen vor, bei der andern Art nicht; die Schräg-Eindrücke hinten sind schwächer, die glatten Beulen vor ihnen weniger deutlicher, die Punkte sind feiner, ebenso die Zähnchen vorn an der Seite. Die Flügeldecken sind schmäler, aber sonst ganz gleichartig gebildet; je 3 Rippen, alle vollständig, aber die letzte weniger kräftig, dazwischen je zwei und zwischen der 2. und 3. Rippe von der Basis bis vor die Mitte drei tiefe, genäherte Punktstreifen; das Ende der 3. Rippe und der Seiten- und Spitzen-rand sind fein gezähnelt.

Monochirus horvathi, Gestro, aus Java gehört zur Gattung *Rhadinosa*, da die Klauen an der äussersten Spitze getrennt sind; sie ist an dem auffällig langen 3. Fühlerglied zu erkennen.

Die ursprünglich von Vorder-Indien beschriebene *Hispella andrewesi*, Wse., wurde mir von Herrn Veerbeck aus Java (Monggot) eingesendet. sie kommt auch in Tonkin vor, woher sie Pic als *H. donckieri* beschrieben hat.

A NOTE ON *PHLEBOTOMUS VEXATOR*, COQUILLET (DIPT.)

By Oskar Theodor, Ph.D.

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The descriptions of *Phlebotomus vexator*, so far as they are known to me, give only a few and insufficient details on the wing-venation, coloration, and the male genitalia.

Through the kindness of Prof. M. Hertig, who sent specimens of *P. vexator* to the Institute of Parasitology, I have had the opportunity of examining 3 ♀♀ and 2 ♂♂ caught in Plummers Island, Maryland (June 1932) and thus of completing the description. I have to thank Prof. S. Adler for placing this material at my disposal.

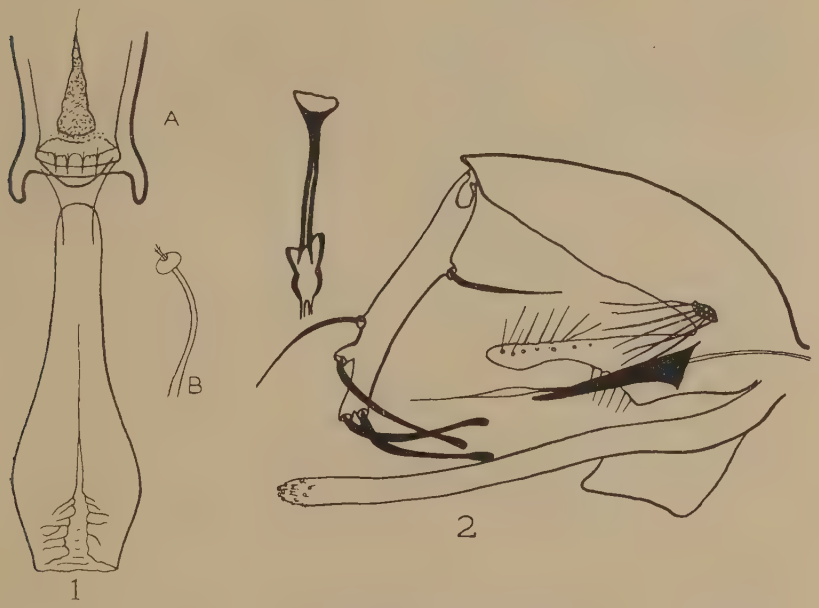
Female.

Size : 2·5 to 2·7 mm.

Wings : Length 2·5 mm. Breadth 0·6 mm. Wing index $\frac{\alpha}{\beta}$ = 1·5 to 2·2.

Palps : Formula 1, 2, 4, 3, 5. Relative length of segments 1—3·2—4·4—3·7—6·5.

In the specimens examined the palp formula for *P. vexator* differs from that given by Dyar, who states that the fourth article " is much shorter than the second or the third."



Figs. 1–2.—*P. vexator.* Fig. 1, *a*, Buccal cavity and pharynx of female; *b*, Spermatheca; fig. 2. Male genitalia.

Antennae : Segment 3 > 4 + 5.

Buccal Cavity : Structure in general like that of the five South-American species described previously (1932). There are two systems of teeth on the ventral plate. The horizontal row consists of four long pointed teeth as in *P. migonei*, but there are 2 to 3 small horizontal teeth in each of the lateral spaces between the long ones. There are no such teeth in the space between the two median long teeth. The vertical system consists of two rows of small point-like teeth. The pigmented area is carrot-shaped, and the pigmentation is rather faint. The backward curvature of the dorsal plate is well developed (fig. 1, *a*).

Pharynx : Twice as wide posteriorly as anteriorly with a few faint ridges in the posterior part.

Spermathecae : Similar to those of *P. cortelezzii* with a small flattened bulb and very long narrow ducts with separate openings (fig. 1, *b*).

Male.

Size : 2 mm.

Wings : Length, 2·25 mm. Breadth 0·5 mm. Wing index $\frac{\alpha}{\beta} = 1, 3.$

Palps and Antennae as in the female.

There is no armature visible in the buccal cavity in the specimens examined. The pharynx is similar to that of the female but more slender posteriorly.

Genitalia : The distal segment of the superior clasper is $\frac{2}{3}$ of the length of the basal one. It bears five long spatulate spines, two apical ones, one at the apical third, one about halfway between the apical ones and the one at the apical third (or slightly more basally) and one at the basal third or slightly nearer to the middle of the segment. All spines are of about the same size. The basal segment is rather stout and bears 6 to 8 long straight spines near its base at its ventral inner surface on a small circumscribed area which is more heavily chitinised than the rest of the segment. The middle clasper is slender with a long neck and without any armature. The penis is a long cone, and the genital filaments have a swelling a short distance before their termination. The inferior claspers are considerably longer than the basal segment of the superior clasper.

According to the structure of the buccal cavity, *P. vexator* clearly belongs to the same group as *P. intermedius*, *P. migonei*, *P. cortelezzii*, etc. It appears therefore that the number of spines on the apical segment of the superior clasper as well as the presence of a tuft of hairs at the base of the basal segment of the superior clasper are not characters of sufficiently high taxonomic rank to justify the creation of genera.

A classification of the American Phlebotomi cannot be attempted before the majority of the species has been re-examined and fully described. A paper by Costa Lima on the American species has appeared (1932) in which the author gives figures of the spermathecae of many South American species, but he does not describe any armatures in the buccal cavity or the pharynx which show very distinct features in the few species that I have had the opportunity of examining.

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ERRATA.

p. 108, line 8 from bottom, for "*Axiagaster*" read "*Axiagastus*."
p. 182, line 9, for "*cinnomomeus*" read "*cinnamomeus*."

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